NT GETS MUSCLES Microsoft and its partners team to make Windows 2000 reliable and scalable. Page 17.

INTERNET VOICE ANYONE? Business customers are interested, but critical issues are unresolved. Page 8.

The newsweekly of enterprise network computing

NetworkWorld

THE NEW ALCATEL

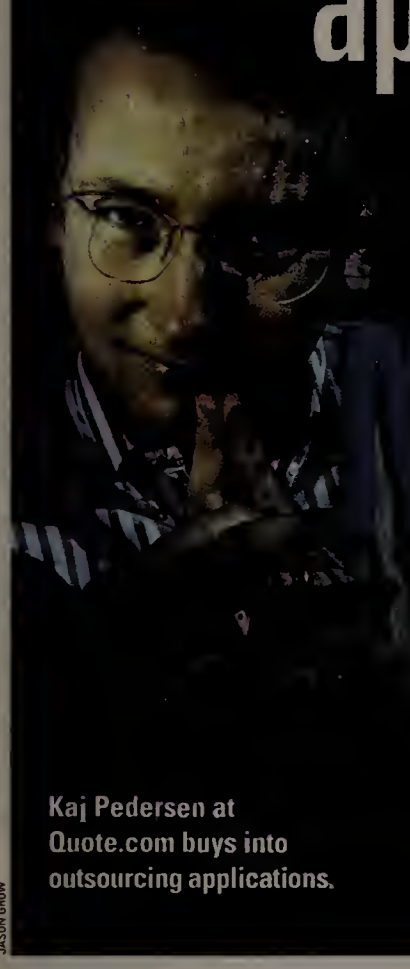
The French firm gets ready to explain all those data network buyouts.

Page 6.

May 31, 1999 Volume 16, Number 22

The network portal: www.nwfusion.com

Take my apps, please



Kaj Pedersen at Quote.com buys into outsourcing applications.

JASON GROW

Small to mid-size firms are buying into the application outsourcing idea, but larger companies have yet to follow.

BY PAUL MCNAMARA

Might your company be missing the boat on application outsourcing?

The seductive pitch from a rapidly expanding list of application service providers (ASP) goes like this: Let us handle your enterprise e-mail, virus scanning, enterprise resource planning (ERP), electronic commerce and other applications, and you'll save upfront money, deployment time and, perhaps most valuable, precious IT staff resources. Moreover, you'll find your costs more predictable, operational and end-user support more dependable, and painstaking software upgrades a thing of the past.

Enticing though this may sound, most network executives have so far resisted the temptation to outsource applications. Despite all the predictions of a pending boom in the ASP market, these professionals say they are unwilling to bet their businesses on the performance promises of third parties outside of their immediate control.

See **Outsourcing**, page 47

Frame relay at the crossroads

Frame Relay Forum mulls shift in focus.

BY TIM GREENE

At the tender age of 8, the Frame Relay Forum is having an identity crisis.

In August, the forum's technical committee will decide whether it should continue to develop and set standards for the versatile packet technology or scale back and acknowledge that the forum's work is substantially done.

Instead of fading away, proponents say the forum should focus on developing new guidelines, such as how frame relay should interoperate with emerging IP quality-of-service (QoS) technologies, including Multi-protocol Label Switching (MPLS).

ATM already surpasses frame relay at supporting QoS and makes it possible to converge voice, data and video on one network. Even forum members wonder if it makes sense to keep expanding frame relay features in the face of more fully featured alternatives.

Lori Dreher, president of the Frame Relay Forum, says: "We don't have a true frame relay

See **Frame relay**, page 64

IBM reinvents net unit . . . again

BY MARC SONGINI

RESEARCH TRIANGLE PARK, N.C. — Just a year after its last major overhaul, IBM's Networking Hardware Division (NHD) is going through yet another disconcerting round of changes.

IBM says it is restructuring NHD's work force — a move that will affect some 150 employees — and is once again shifting product strategies and changing NHD's role

See **NHD**, page 65

Credit crunch for e-comm wannabes

BY ELLEN MESSMER

You think you're all set to sell products via the Web. Back-end systems are in order, Web developers are coding away, and marketing is ready to kick in. But have you asked your primary bank if it will process the flood of new credit card transactions?

Lots of businesses have asked, and the answer they've often received is: "No!"

It's the dirty little secret in electronic commerce today. Because the Internet is seen as riddled with fraud — experts site everything from stolen credit cards to fly-by-night merchants — banks won't hand businesses the type of credit card bank accounts they need for e-commerce. But a host of upstarts — some with questionable operations — are stepping in to fill the gap in Internet merchant credit.

"The banks may reject merchants and not tell them the real reason why, which is that the banks are afraid of the Internet," says Gail Grant, CEO at GLG Consulting in Palo Alto, an expert in online card pro-

See **Credit**, page 64

More Online

- See how some businesses are fighting back with an online fraud database.
- A look at the reluctance of some law-enforcement agencies to address the problem of online fraud.

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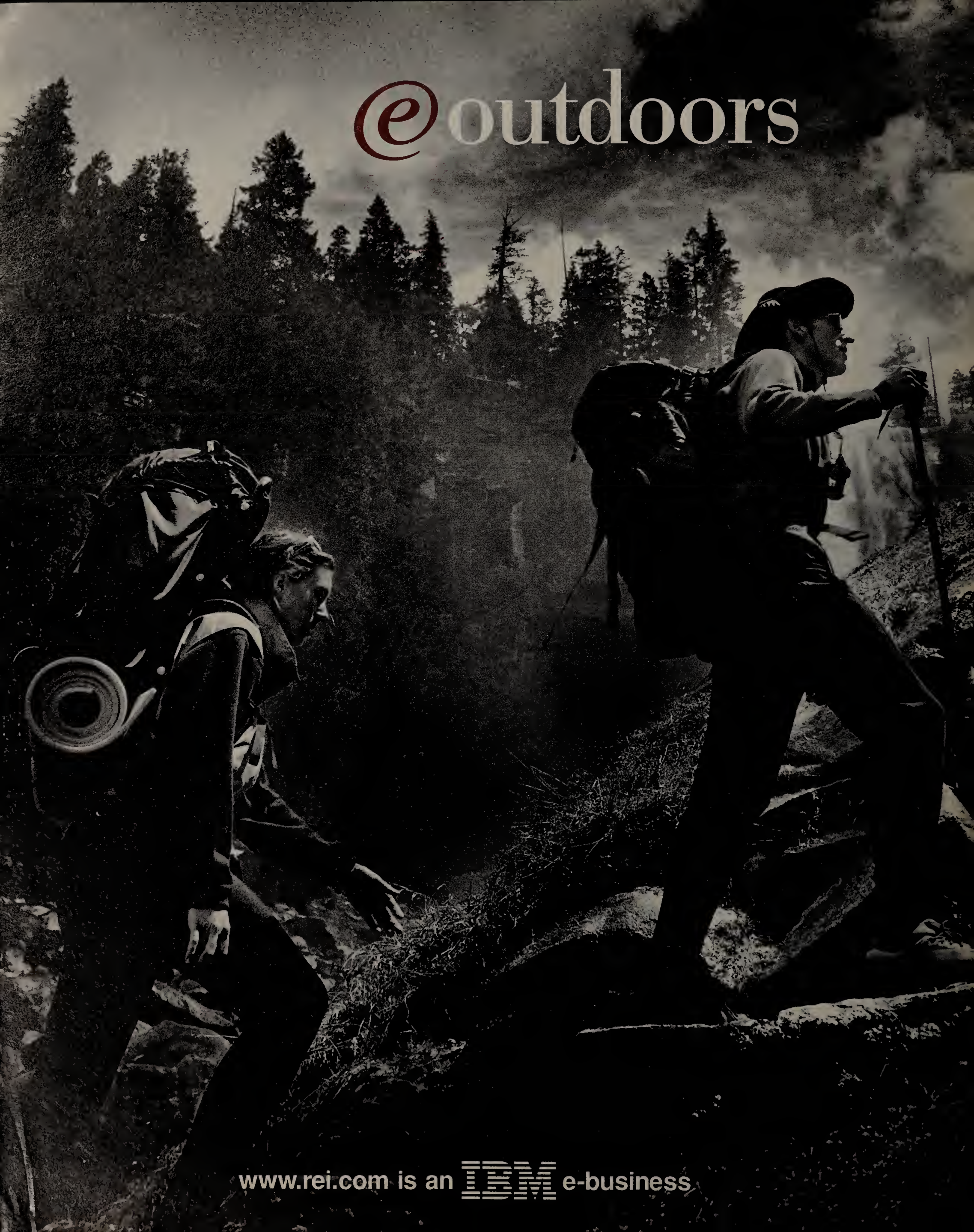
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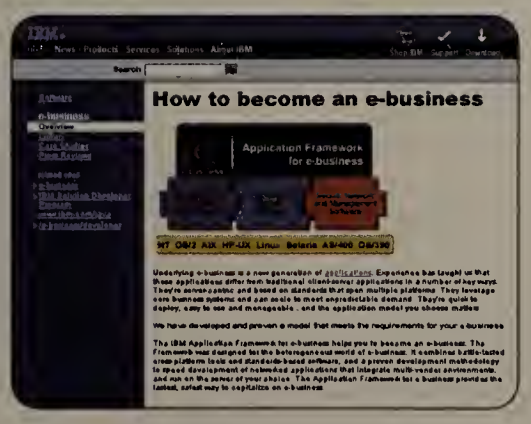
IBM e-commerce software powers the REI online store — and sales that exceed projections by over 360%. Can IBM e-commerce software help you?

IBM software is helping thousands of companies build, run and manage powerful interactive e-commerce Web sites. For REI, that means everything from state-of-the-wilderness gear you can buy to clinics on outdoor skills, enthusiast bulletin boards and a world of trips and tours. The scope of REI's offerings led them to IBM.

IBM software provides the building blocks for all facets of e-business, including secure payments, electronic catalogs, and order processing. For REI, proven products, such as Net.Commerce, DB2® Universal Database™ and IBM Firewall deliver the scalability, reliability and security it takes to reach, sell and service a growing community of outdoor enthusiasts.

The results have been nothing less than astonishing. In the first quarter alone, REI's sites generated online sales that exceeded projections by over 360%. And these e-sales are 4 times the size of those in their brick-and-mortar counterparts. Bottom line, REI is growing profits far beyond its wildest expectations.

REI is just one example of the thousands of e-commerce businesses IBM software has helped build and grow. From Web storefronts to integrating your business systems and supply chains, IBM offers a breadth of software products simply unmatched by anyone. All backed by the know-how and support of IBM and its Business Partners.



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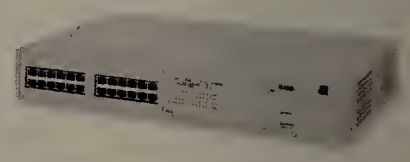

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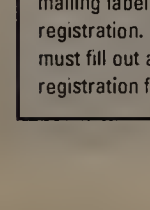
MAY 31, 1999

THIS WEEK ONLINE

Streaming media. A lot of companies have dabbled with streaming video on their intranets. Sun Healthcare Corp. has made it an integral part of the company — its staffers now produce 40 hours of video per month and have integrated their videos into training applications. See how they do it. **DocFinder: 3142**

Vortex. Bob Metcalfe's annual Vortex conference on convergence attracts the big names in the networking and venture capitalist communities. Read our exclusive reports from last week's confab. **DocFinder: 3141**



Water Cooler. News that Burger King is now giving away Internet access in exchange for buying a Whopper troubles Associate News Editor Michael Cooney. Is nothing sacred, he wonders? Can't a guy get a bite to eat without worrying about faster downloads? **DocFinder: 3144**

Frame relay. A Fusion user has a crazy idea that he could run a virtual private network over his frame relay network and use the Internet for back up. Would it work? Let him (and us) know. **DocFinder: 3140**

Rogue end users. You know the type: They insist on using their own e-mail client and love to tinker with their PC and network settings. Maybe they even attach a device or two to the network. What do you do about them? **DocFinder: 3143**

Software deployment. A user getting ready to roll out Internet Explorer 5 across 700 PCs wants to know the best way to do it. Do you have any suggestions? **DocFinder: 3145**

How to get onto Network World Fusion

Click on Register on the home page and follow the instructions. Subscribers, keep your NWF number — highlighted on the front cover's mailing label — handy during registration. Nonsubscribers must fill out an online registration form.

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Michael Cassadine, chairman of the Network Professional Association, touts the many benefits of membership. Page 54.

Special Focus

MANAGING VPNS

Virtual private networks are easy — once you get the clients installed. Page 28.

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STAFF: See the masthead on page 8 for more contact information. **REPRINTS:** (717) 560-2001

FEATURES

Take my apps, please:

The application outsourcing market is poised for growth as small to mid-size companies buy into the plan, but larger firms have yet to follow. Page 1

Kaj Pedersen at Quote.com buys into outsourcing applications.

REVIEW:

Seagate's WinLAND comes out on top in our look at five inventory and asset management systems that help you take stock of local and remote network clients. Page 61

NEWS BRIEFS, MAY 31, 1999

56K modem man strikes (it rich) again

You can make a lot of money in this high-tech business. Just ask Brent Townshend, the father of the 56K bit/sec modem. Townshend licensed his patent on the technology to 3Com in 1996, but recently he has reacquired the rights.

Townshend earns $1.25 for every 56K bit/sec PC modem and $2.50 for every 56K bit/sec server modem sold. Townshend stands to make more than $100 million on the technology over the next few years.

56K = $155 million

With a patent on 56K modems that pays him $1.25 per modem sold, Brent Townshend won't have to worry about retirement.

	Worldwide 56K modem shipment projections (in millions):	Royalties per year (in millions):
1999	25	$31.3
2000	31	$38.8
2001	33	$41.3
2002	35	$43.8

SOURCE: IDC, FRAMINGHAM, MASS

Equinix takes off

Last week, Redwood City, Calif., start-up Equinix officially launched its Internet Exchange business, which was announced last year in *Network World* (Oct. 19, 1998, page 14). The new company, which has raised more than $12 million over the past few months from investors such as Cisco, Microsoft and Benchmark Capital, plans to build 15 Internet exchange points across the U.S. within the next 18 months.

The exchanges will be used by ISPs, content providers and large enterprise users that need to directly connect to each other and swap Internet traffic. The first exchange, located in the Washington, D.C., area, is expected to be ready for business in July.

Satellite services getting hammered again

Reports indicate that struggling satellite communications vendor Iridium is looking to restructure financing with banks and its chief investor, Motorola, in the face of mounting debt.

In an effort to attract new customers, Iridium soon is expected to announce price cuts for its offerings. Meanwhile, Motorola last week pulled some 600 engineers from participation in Teledesic's $9 billion, 288-satellite project. However, Motorola stopped short of withdrawing from the high-speed satellite services project altogether.

Bill Gates, population expert

Microsoft Chairman Bill Gates and wife Melinda French Gates last week gave $20 million to Johns Hopkins University to help developing nations address health problems posed by population growth. The money will help create the Bill and Melinda Gates Institute for Population and Reproductive Health. Operating as part of the Johns Hopkins School of Public Health, the institute would provide its trainees with Internet-based distance-learning programs and train scientists in information systems technology and data management.

You've got to pay to play

The average cost of developing and launching an enterprise electronic commerce Web site is $1 million, according to a new Gartner Group study. The firm estimates that 79% of the total development cost is labor-related, while 10% is spent on software and 11% on hardware. The report also says that the cost will rise by 25% annually.

Look out road rage, here comes 'techno rage'

U.K. office workers are so frustrated with their computers that they suffer from "techno rage" and blame God, their IS departments, hardware makers, software makers and even Microsoft Chairman Bill Gates for their computer failures. More than one-third of the 250 people surveyed said they have become so angry at times that they would like to throw their PCs out the window, according to Joe Michael, director of NOP Research Group, the London company that conducted the survey. However, Michael says that to become angry enough to actually damage a computer is rare. "To get to that level, they would have to be pretty psychotic to begin with," he says. Many people do hit screens and keyboards out of frustration but without enough force to cause damage, the survey stated.

Hack attack

Hackers claiming to belong to groups called Team Spl0it, Global Hell and others last week went on a hacking binge against government sites after the Federal Bureau of Investigation launched a crackdown to arrest hackers across the U.S. The U.S. Senate's and the state of Virginia's Web pages were defaced, while the FBI shut down its own site temporarily after severe denial-of-service attacks.

Lawsuit, layoffs dog ever-changing Alcatel

BY JEFF CARUSO

Amid layoffs, sell-offs and a lawsuit, Alcatel this week is expected to reorganize and rename its newly acquired data network companies in an attempt to establish itself as a major competitor in the field.

In recent months, Paris-based Alcatel has snapped up Gigabit Ethernet switch maker Packet Engines, LAN hardware vendor Xylan and access device vendor Assured Access Technology. Now Alcatel is expected to clarify how the companies fit together and is likely to consolidate them, probably under the name Alcatel Data Solutions, industry sources say. Details of the reorganization were not available.

Packet Engines' Daines is suing Alcatel, which bought out his company.

As if Alcatel doesn't already have its hands full integrating several recently acquired data network companies, the founder of one of those firms last week filed suit against the French telecom giant.

Packet Engines' founder Bernard Daines is seeking an unspecified amount from Alcatel, claiming the company terminated his employment agreement without cause — by changing Daines' responsibilities and shifting control of Packet Engines away from the Gigabit Ethernet pioneer's Spokane, Wash., offices.

The lawsuit news comes on the heels of 42 layoffs reported earlier this month by *The Spokesman-Review*, a Spokane newspaper. The layoffs reduce Packet Engines' 209-member work force by about 20%.

Alcatel bought Packet Engines for $325 million late last year. Daines left the company soon after Alcatel announced in March that it would buy Xylan for $2 billion and make Xylan its "center of competence" for data network gear.

Daines says his job and the job of Assured Access CEO Arthur Klein were eliminated, leaving Xylan CEO Steve Kim in control of the combined company. "Alcatel is a highly political company, and Xylan got full rein" over the other two subsidiaries, he says.

The goal of the layoffs is to minimize overlap between Xylan and Packet Engines. Alcatel is creating a single service organization and a single sales group from the two companies. From a technology standpoint, Xylan gear will be Alcatel's primary equipment for the enterprise, competing directly against Cisco equipment.

Meanwhile, Packet Engines' switches will be positioned for the "packet core" of ISPs, Kim said recently. Alcatel will offer dial-up and digital subscriber line equipment from its acquisition of Assured Access Technology, and Alcatel will plug in its own voice-over-IP gateway.

In the future, Xylan will extend its network management for service providers, adding capabilities for billing and accounting. The company will also retrofit its gear to be carrier-class.

Separately, Alcatel last week sold the European operations of its DSC Communications subsidiary to Tellabs for $110 million in cash. The European business develops high-speed, fiber-optic transport gear for carriers.

While this transaction is unrelated to the Packet Engines activity, it is another example of the new wheeler-dealer culture that has set in at Alcatel.

Although many changes are taking place at Alcatel and its subsidiaries, it's much too soon to evaluate how well the company is building a strategy out of its new acquisitions, says Craig Johnson, an independent consultant in Portland, Ore.

"The ink isn't even dry on these deals," he says.

It will be important to see how Alcatel competes against Cisco, Nortel Networks and others over the next year, he says. ◪

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Internet voice services lagging

Big implementations on hold until reliability, quality issues are sorted out.

BY DENISE PAPPALARDO

The hype surrounding voice over the Internet is still disproportionately large compared to the number of services that business users can buy today.

Service providers are offering voice-over-Internet calling card services and some international Internet voice services are taking off, but from what customers and analysts have seen of early carrier offerings for business customers, much work needs to be done.

"Everyone is just scratching the surface," says John Montgomery, an information services executive at Embarcadero Systems, a large container shipping company in San Francisco. "It's clear that reliability and quality still aren't good enough."

Business users are not willing to sign up for an Internet voice service that does not offer the same quality of service (QoS) they get over the public switched telephone network (PSTN) today, says Dan Merriman, vice president at Giga Information Group, a Cambridge, Mass., consulting firm. With quality issues still being hammered out in standards organizations, most ISPs have been reluctant to bring voice services to their business customers.

In fact, PSINet is one of the only ISPs to date that has delivered a point-to-point Internet voice service to business customers. PSINet offers the service as part of its virtual private network (VPN) offering.

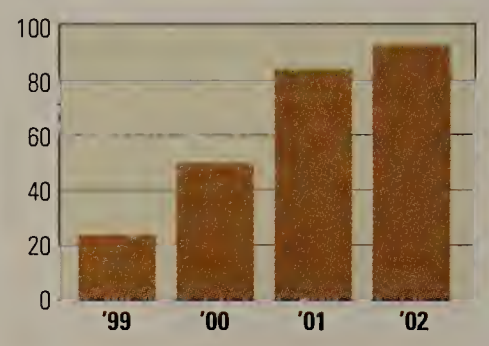
Initial Internet voice services for businesses will typically only travel over a VPN controlled by a single ISP. This type of service will let users significantly reduce the cost of intracompany calls. Even though ISPs may charge an extra monthly fee for customer premises devices, users can eliminate nearly all of their long-distance telephone costs among corporate sites.

Second-generation services are expected to include voice support over multiple ISPs' networks and the PSTN.

The promise of Internet voice

The market for Internet voice services is expected to explode as consumers, followed by businesses, sign on.

Projected U.S. Internet voice minutes of use (in billions)



SOURCE: IDC, FRAMINGHAM, MASS.

AT&T's ISP division has been testing voice over its VPN service internally and with two business customers since October. But the service provider doesn't know when it will officially support voice as part of its VPN service, says Oleh Danyluk, an AT&T general manager. The industry still needs to agree on how to support QoS over the Internet and how to deploy and support voice services on a large scale over the 'Net, he says.

The IETF's emerging Multiprotocol Label Switching and Differentiated Services standards are expected to bring QoS to the Internet. But it will be more than a year before ISPs deploy these technologies throughout their networks, Giga's Merriman says.

UUNET, MCI WorldCom's ISP division, is taking an even more cautious route than AT&T. The ISP has yet to test any Internet voice products, says Ralph Montfort, a UUNET marketing executive. "Voice over IP is still one of those things that people talk about because it's cool, but they aren't making decisions to roll it out," Montfort says. UUNET customers aren't asking for voice services to be integrated into UUNET's VPN offerings, he adds.

The response to PSINet's Internet voice offering, dubbed PSIVoice, has been lukewarm. The service provider has fewer than 20 customers, but the service has only been available for five months. PSIVoice lets business users connect PBX switches over their PSINet VPNs. PSINet plans to offer PBX-to-public phone network services by year-end.

Concentric Network has also committed to rolling out voice support on its VPN service, most likely by year-end. Concentric has been testing several voice-over-IP gateways that will offer business-quality service.

GTE Internetworking is in the process of conducting its second internal voice-over-IP test using Cisco's equipment. But the ISP would not offer any specific time frame or service goals for a voice-over-IP rollout.

BMW Manufacturing, a Spartanburg, S.C., automobile company, is interested in deploying voice over the Internet, but not anytime soon, says Sim Wright, coordinator of information technology.

Today, instead of waiting for service providers to offer aggressively priced voice-over-IP services, BMW is taking advantage of international calling rates that have dropped significantly in the past several months. But BMW does think that supporting voice over a global VPN is in its future.

"Simplicity and standards across the board will be key to the success of these services," Wright says. "We are constantly looking at emerging technology and services, and if something offers efficiencies and cost savings, then BMW will deploy it." ◪

More Online

- **Links to carriers and ISPs with Internet voice offerings.**
- **Overviews of the state of MPLS and other QoS efforts needed for large-scale voice implementations.**

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Compaq to launch app server line

BY NANCY WEIL

HOUSTON — In July, Compaq will jump into the appliance server market with a family of new boxes aimed at helping users run Web sites.

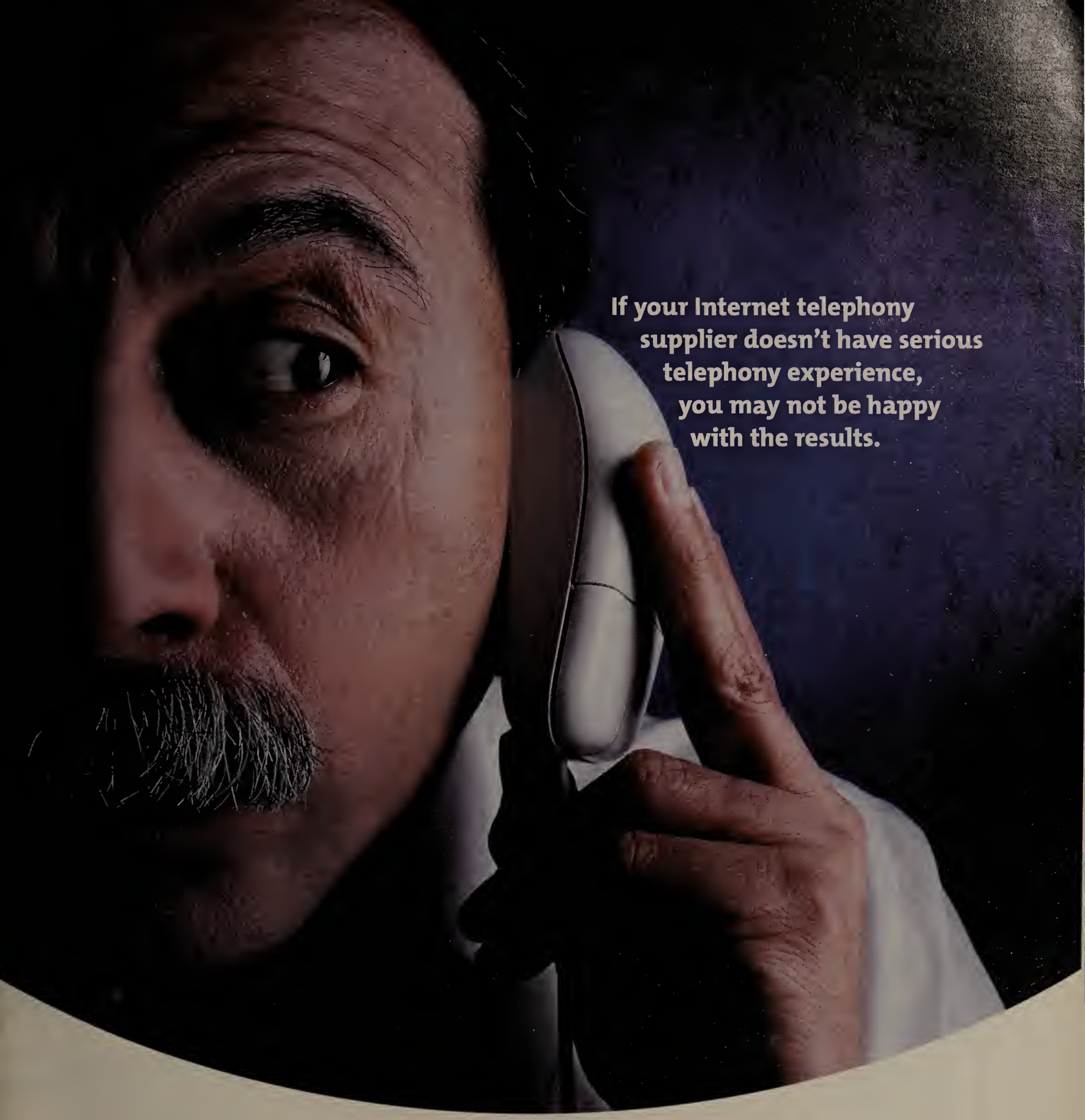
The company will roll out three models in the TaskSmart C-Series. The products will cache users' most commonly requested Internet sites and will include a URL blocking function so access to certain Internet addresses can be blocked. An appliance server handles one specific function, such as Internet caching, and is used to take some of the load off general-purpose servers.

Novell has altered its NetWare operating system kernel to run the caching server series, says John Young, director of appliance and communication servers at Compaq. The servers will ship bundled with NetWare, as well as with Compaq's Insight Manager product.

The C1200R model will offer two 10/100 Ethernet ports, 256M bytes of error checking and correcting memory (ECC) synchronous dynamic random-access memory (SDRAM), and one 9.1G-byte hot-pluggable hard drive. The C1500R will support disk mirroring and hot-pluggable drives, three 10/100 Ethernet ports, 512M bytes of ECC SDRAM and two 9.1G-byte hot-pluggable hard drives. The C2000R will offer the same disk and drive support as the C1500R, five 10/100 Ethernet ports, 1G byte of ECC SDRAM and six 9.1G-byte hot-pluggable hard drives. The series' base model will sell for under $10,000.

Compaq: (281) 370-0670

Weil is a correspondent with the IDG News Service's Boston bureau.



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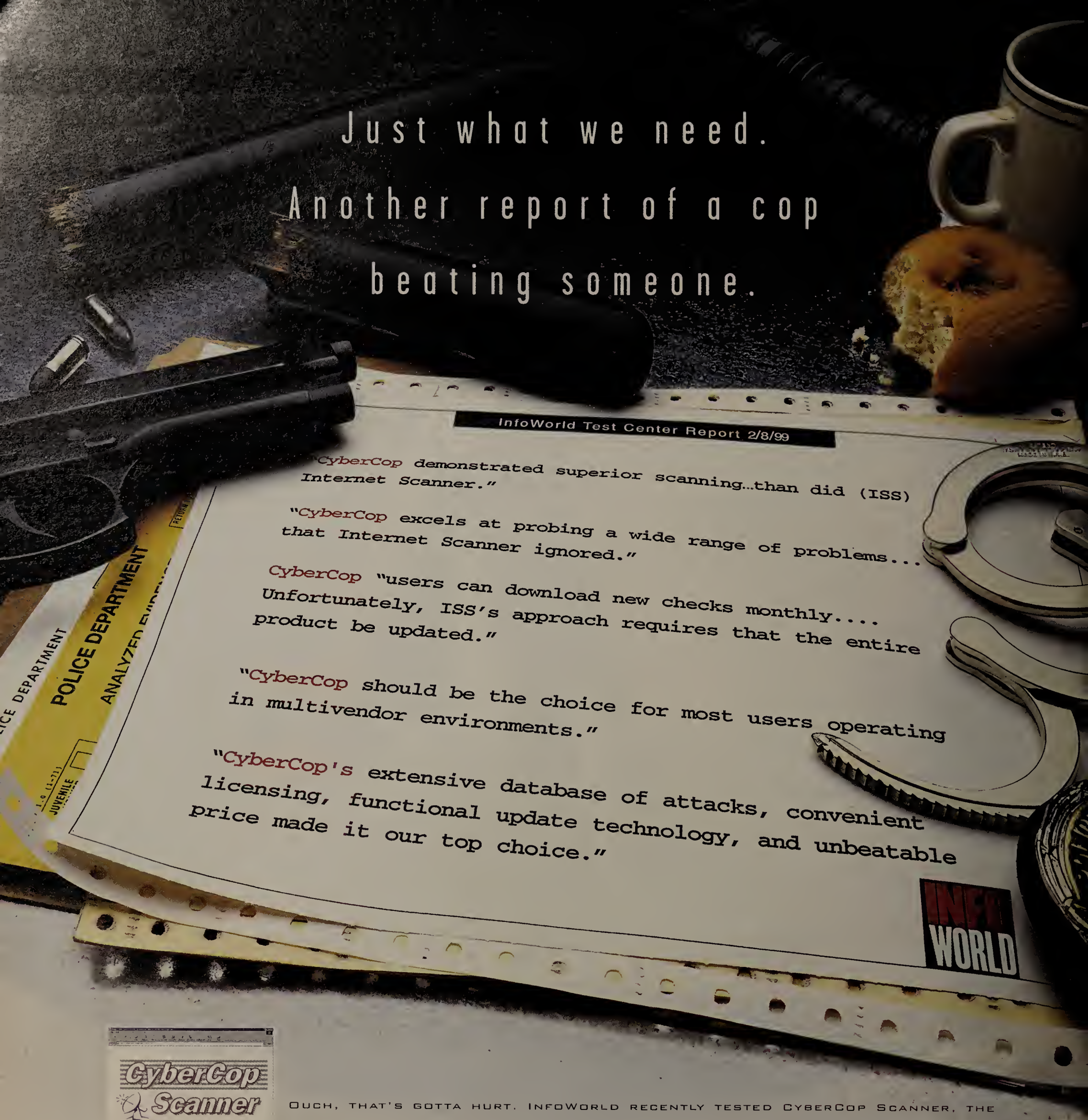

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Test results spark IBM-Cisco battle

IBM claiming Network Utility and 2216 support more tn3270 sessions for less than Cisco CIP.

BY MARC SONGINI

RESEARCH TRIANGLE PARK, N.C. — Using recent router-performance test results, IBM is delivering jabs at archrival Cisco, but Cisco is crying foul.

IBM has revealed to *Network World* the results of a series of tests comparing the performance of the IBM 2216 multiaccess connector and the Network Utility tn3270 Server device to that of a Cisco 7507 router equipped with a Channel Interface Processor (CIP).

All three devices were attached to an IBM G-5 mainframe and ran tn3270 sessions. According to tests conducted by The Tolly Group, an independent testing firm, IBM's Network Utility and 2216 outperformed the 7507 with the CIP by as much as 40%.

The 2216 is a router that handles SNA and IP; the Network Utility is a smaller SNA-to-IP gateway; and the CIP is a card that sits in a Cisco IP router and links IP or SNA nets to a mainframe. Tn3270 software lets users access SNA resources via IP links.

These SNA-IP gateway products are crucial for users who need to access their legacy applications over IP. Because the SNA applications are so important and accessed so frequently, an SNA-IP gateway can frequently be a source of bottlenecks.

The results are in (dispute)

In a recent Tolly Group test of mainframe channel-attached gear, IBM's 2216 router and Network Utility device outperformed Cisco's 7507 in tn3270 transactions per second (transaction/sec). Cisco has disputed the test's methodology.

Note: Transaction sizes are 100 bytes in, 800 bytes out.

IBM's 2216	1,052 (transaction/sec)
IBM's Network Utility	1,049 (transaction/sec)
Cisco's 7507	704 (transaction/sec)

SOURCE: THE TOLLY GROUP, MANASQUAN, N.J.

And the results are . . .

IBM claims it has scored big in the latest tests. For instance, in a 9,000-session tn3270 test, the IBM 2216 handled 1,052 transaction/sec as compared with Cisco's 704 transaction/sec — a 33% gap. By dividing the list price of the hardware and software by the number of transactions per second, these results translate into about $67 per transaction for the 2216, compared with $163 per transaction for Cisco's 7507. IBM claims its gear maintained this pricing difference over the majority of the tests.

However, Frank Maly, head of marketing for Cisco's InterWorks Business Unit, says this test is just creating confusion for users. The test only focused on the performance of a single Cisco CIP — while IBM was using two full router platforms — the 2216 and Network Utility. Such a comparison is inaccurate, Maly says, charging that "it tells the customer nothing."

This isn't the first time IBM and Cisco have argued over gateway benchmarks. Originally, IBM held a 2216-75XX test in August 1997 (*NW*, Aug. 18, 1997, page 78), also conducted by The Tolly Group. The findings of those tests were favorable to IBM and disputed by Cisco. Since then, there have been several unsuccessful attempts to agree on testing terms acceptable to both companies.

The two companies still couldn't work out their disagreements in time for this recent round of tests, held during March and April at an IBM facility in Gaithersburg, Md. Although Cisco's Maly originally committed to the project, he declined to participate before testing began. Maly says he refused because IBM wouldn't allow Cisco to fund half of the test, or co-design it: "We recognized this was an uneven playing field, and we chose not to participate."

Maly says he has a standing offer to hold a Cisco-IBM bakeoff — if it is conducted fairly.

IBM is touting the recent test results as a victory for itself in the price/performance arena — its Network Utility costs about $62,500 and its 2216 is priced at $65,245. Cisco's 7507 with CIP costs $119,650.

"We clearly have an edge in performance," says Jim Goethals, product manager at IBM's Networking Hardware Division.

User leery of results

But such IBM-sponsored tests are not to be trusted, says one Cisco user, an IT manager at a large insurance company who spoke on condition of anonymity. The user's network has 17 mainframes running IP and SNA to remote users and sites for a variety of business transactions.

The previous Tolly test left the user unimpressed: "It was configured in a way that made IBM look a lot better than Cisco."

In this user's network, there are 10 Cisco 75XX routers with 14 CIP cards running SNA and IP traffic. The user's company went with Cisco because the firm offered ATM LAN connectivity, which the IBM 2216 didn't have at the time, the user says.

The Tolly Group, which is publishing the results on its Web page (www.tolly.com), insists its tests are objective and that the results can be repeated. ◪

Correction

Our VPN Buyer's Guide review (*NW*, May 10, page 86) should have stated that all client software is included with Compatible Systems' IntraPort 2+ for the price of $9,995.

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FCC boosts E-rate spending

Commission also issues proposals to ease area code shortage problems.

BY DAVID ROHDE

WASHINGTON, D.C. — The Federal Communications Commission last week gave more of the nation's school districts a chance to get discounts on network equipment and services, while in all likelihood making all other users pay for those discounts.

The commission voted 3-2 to boost spending on the E-rate program for the 1999-2000 academic year to $2.25 billion, the maximum allowed by law. The program last year received $1.3 billion and ran out of money before all the applicants could get discounts for hubs, routers and other gear, in addition to cut-rate ISP and telecom services.

The FCC's vote, which split the commission along party lines, was loudly applauded by the National Education Association, but also was immediately followed by cautions from big carriers that they may raise existing "universal service" surcharges to pay for the increase. Also at last week's FCC meeting, the commission moved to begin changing the way carriers are assigned telephone numbers, in an attempt to ease the area code crunch.

The E-rate decision carried heavy overtones of 2000 presidential politics. The program is closely identified with Vice President Al Gore, who has promised that all classrooms will be connected to the Internet by next year. All three Democratic commissioners said raising E-rate funding will help boost education, but Republican Commissioner Michael Powell implied the decision was politically motivated.

Even at the lower funding level, Powell said, most schools already have some Internet access now or will by next year. "What's your hurry?" he asked his colleagues, cautioning that the higher funding level could trigger court challenges. He also decried "rhetoric" that elevates the urgency of helping students learn computer skills to "racing a dying child to the emergency room."

Key to the E-rate advocates' victory was the support of network-industry CEOs. Six days before the vote, several CEOs — including 3Com's Eric Benhamou, Cisco's John Chambers and Novell's Eric Schmidt — signed a letter supporting the full $2.25 billion E-rate funding. That annoyed the other Republican commissioner, Harold Furchtgott-Roth, who pointed to statistics showing that only a small percentage of E-rate funding actually goes to Internet access services.

"Most of the money goes for expensive computer equipment that has nothing to do with accessing the Internet, but perhaps has to do with padding the profits of a few computer companies," Furchtgott-Roth claimed.

Democratic Commissioner Susan Ness tried to soften Furchtgott-Roth's criticism by urging carriers not to treat the E-rate funding increase as justification to pass along large surcharge increases. "This is incremental funding. It's not a huge amount to bear," she said.

However, AT&T, for example, says it has no choice. "Since our costs will go up, the amount we have to cover from customers will go up," says a spokesman in AT&T's government affairs office.

For their part, users were annoyed both at the cost burden and the budget uncertainty created by changing funding levels. "Every time you turn around you have a new surcharge being imposed," complains Andrew Stratford, vice president of telecommunications at Congress Financial Corp., a specialized lender based in New York. "You can't plan ahead."

In the area code matter, the FCC proposed several ways to change the system by which carriers assign phone numbers. Currently, new carriers must take numbers in blocks of 10,000, because switching systems can't recognize anything smaller (*NW*, April 19, page 6). As a result, areas with many new carriers keep suffering area code splits. The FCC said it may force carriers to share 10,000-number blocks, though that will require changes in carrier switch software. The FCC said it may also change its policy to authorize "technology-specific" area codes. Wireless carriers have fought that idea in the past. ◪

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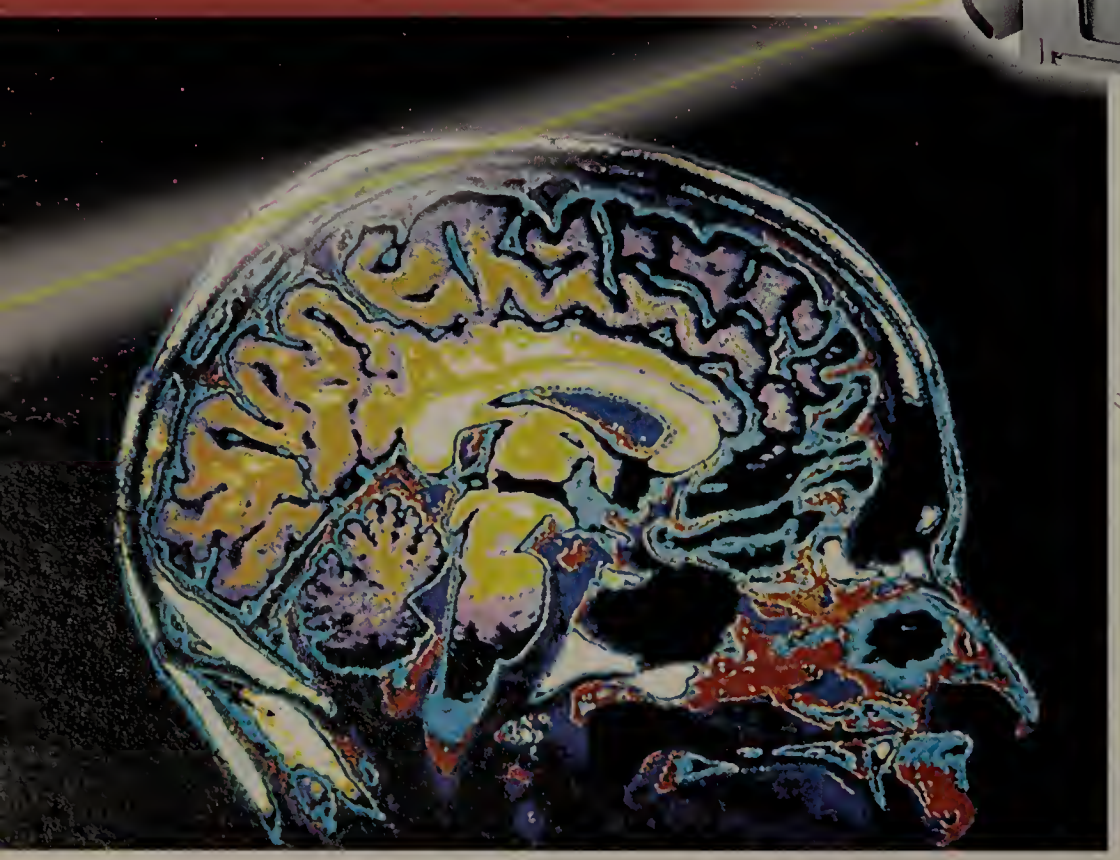

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Nortel boosts VPN switch capacity

BY DAVID ROHDE

SANTA CLARA, CALIF. — Nortel Networks this week will try to make IP virtual private networks twice as nice by doubling the performance of its VPN appliance product family.

The company will unveil three new models of its Contivity Extranet Switch (CES), capable of supporting up to 4,000 simultaneous VPN tunnels and leapfrogging the performance of a recent Cisco entry into the still-developing VPN market.

The three new CES models are a new generation of boxes based on the technology from last year's Bay Networks purchase of New Oak Communications. Shortly after the New Oak acquisition, Bay was incorporated into Nortel.

The new branch-office CES 1500 will support 100 simultaneous secure tunnels through the Internet or other IP network. That compares with 50 such tunnels in the comparable current product, the Nortel CES 1000.

Nortel's new lineup comes hard on the heels of Cisco's full-fledged jump into the VPN appliance market with the Cisco 7100 series routers. The routers add tunneling, data encryption, firewall and other VPN capabilities.

The new top-of-the-line Nortel box supports twice as many VPN tunnels as Cisco's, which supports a maximum of 2,000 simultaneous tunnels (see graphic). In addition, new software Release 2.5 for the entire Contivity family now includes Routing Information Protocol support and integrates Check Point Software's Firewall-1.

Nortel officials also tout the flexibility of the Contivity product line. Contivity devices can support a VPN focused on individual end users dialing up via multiple ISPs through the Internet, an internal corporate VPN to replace leased lines or frame relay, or a combination of the two.

For example, the smallest box can be installed at corporate branch offices and supplier or customer locations, with the mid-size CES 2500 at larger regional offices and the CES 4500 at data centers. Additionally, individual remote or mobile end users are given an IP Security (IPSec)-based client to perform encryption and initiate a tunnel. Nortel's list prices include an unlimited license for the IPSec client, which must be installed on all end points throughout a VPN.

The data center box can support 4,000 simultaneous connections from any combination of these remote installations.

Nortel's previous generation of VPN products tended to work simply as an Internet replacement for remote access services, says Matthew Kovar, a senior analyst at The Yankee Group. Though that saved 800 and ISDN toll charges, "it was really just a dial-up world for them before," he says. The new product lineup adds robust LAN-to-LAN interconnection to the VPN, Kovar says.

The CES 1500 is available now with the IPSec client; the Check Point firewall costs extra. The CES 2500 and 4500 and the new software release are due to be available June 28. ◪

Scaling up your VPN

The new generation of Nortel Networks' Contivity Extranet Switch (CES) comes in three models:

Model	Number of simultaneous tunnels	Processor	List price
CES 1500	100	300-MHz Celeron	$7,000
CES 2500	400	333-MHz Pentium II	$20,000
CES 4500	4,000	Dual 450-MHz Xeons	$50,000

Nortel policy mgmt. as easy as 1,2,3

Optivity Policy Services handle priority, security, service levels.

BY JIM DUFFY

SANTA CLARA, CALIF. — Nortel Networks last week divulged its product roadmap for allowing network administrators to define, distribute and enforce policies for granting network service levels to users.

The company unveiled Optivity Policy Services, three policy management applications that help users establish guidelines for guaranteeing traffic priority, switch security and service levels in enterprise networks. Optivity Policy Services, set to be delivered in 1.0, 2.0 and 3.0 versions, is the embodiment of a strategy outlined by Nortel last summer.

"Having that extra level of control is important to us," says Nortel switch user Mike Kusunoki, network manager at the University of California, Los Angeles' Anderson Graduate School of Management. "Yet you are adding an extra level of complexity. We're hoping that this extra level of complexity does help our bottom line in terms of how many hours we have to spend administering [the network]."

Optivity Policy Services 1.0 enables users to prioritize applications. It runs on Unix and Windows NT systems and combines IP address management capabilities with a Java-based policy configuration interface and a policy server.

From a template in the Java interface, a network administrator can define network bandwidth priority policies by marking the type-of-service field in the IP headers of applications. These policies are stored in a directory database and downloaded onto network devices via the Common Open Policy Service (COPS) protocol.

COPS is supported on Nortel routers running BayRS 13.20. Optivity Policy Services can also download policies into Cisco IOS 11.0 devices by emulating the IOS command-line interface, Nortel officials say. Later this year, Nortel will add its Accelar and Passport switches to the COPS mix.

Optivity Policy Services 2.0 adds switch security to the policy management portfolio. The software lets users establish network access policies based on user authentication information.

When users boot up their PCs, Optivity Policy Services 2.0 initiates an Extensible Authentication Protocol session with a Nortel switch. The switch then passes the authentication request to a policy server along with the switch ID, and the port and media access control address of the user.

The policy server then interacts with an authentication server to process the authentication request, and grant network access, quality-of-service configuration and virtual LAN membership to the user.

Optivity Policy Services 3.0 adds policy-based service management. It works with many other Optivity applications, such as Service Management, Reporting and the base discovery, event and topology service package, to let users define and enforce service-level policies in converged voice and data networks.

The new applications cost $25,000 each. Version 1.0 will be available in July; Version 2.0 in the fourth quarter; and Version 3.0 in the third quarter of 2000.

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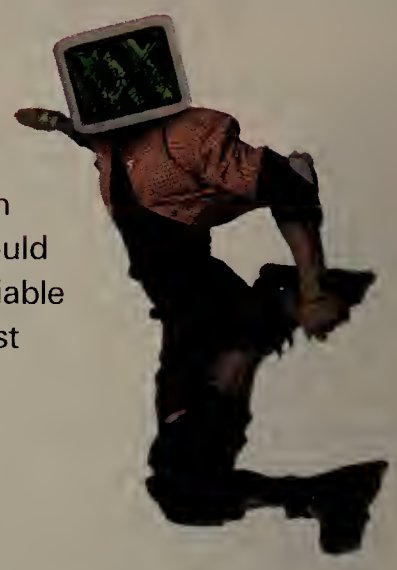

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Microsoft touts heavy-duty Win 2000

BY JOHN FONTANA

DALLAS — Microsoft last week began snapping together the pieces that the company hopes will help build the Windows 2000 operating system into a mainstay of mission-critical computing.

At the company's TechEd '99 conference, Microsoft detailed clustering, server consolidation, large memory and workload management technologies for the DataCenter version of Windows 2000. The technologies address availability and reliability requirements for the next iteration of Windows NT.

DataCenter is Microsoft's high-end version of Windows 2000 and is targeted for the core of corporate computing infrastructures, which is a new realm for the company. DataCenter will be released some 90 to 120 days after the shipment of another version, called Advanced, due later this year.

No room for error

"If we make a mistake with Windows 2000, it's a disaster, so we're not going to make a mistake," said Brian Valentine, vice president of NT development, during a keynote address at the event.

With that attitude in mind, Microsoft joined IBM in demonstrating clustering technology for IBM's Netfinity servers that extends NT 4.0 clustering from four to eight nodes. IBM used the Microsoft Cluster Service (MSCS) API to develop what it is calling Netfinity Availability Extensions for MSCS, which IBM will ship this summer. The technology also is being adapted for DataCenter.

Microsoft, which has only tested four-node clustering for DataCenter, is keeping an eye on IBM and others.

"Hardware vendors that want to test multinode on their platforms will have to show complete compatibility with our API," says Michel Gambier, product manager for NT server. "We will closely monitor that."

Microsoft also plans to certify hardware for DataCenter to ensure compatibility with the operating system.

"We need to hear more about clustering advancements, and we definitely want Microsoft to test and certify hardware," says Steve Dunlap, president of Digitech Solutions, which plans to use Windows 2000 to support Web hosting services.

Other companies join in

In addition to IBM, NuView used TechEd '99 to unveil its Cluster X for Windows Load Balancing Services. The technology also supports MSCS and lets network administrators manage multiple clusters from a single console.

Microsoft used the event to highlight DataCenter's large memory capacity and its ability to support multiple application servers on a single box. Using an eight-processor Pentium III machine with 8G bytes of RAM, DataCenter was able to support three instances of SQL Server during a demonstration. It was the first public display using Intel's Physical Address Extension technology, which supports large memory stores. Microsoft officials say memory gains will help simplify management.

Also, Microsoft and Sequent introduced the Process Control Tool, a workload management utility that lets users assign server resources.

The tool, which will be included free with DataCenter, is based on the Java Object API and allows computing resources to be reserved or assigned to certain processes. Process Control Tool also allows groups of processes to be tied to specific processors. ◪

Teaming up at TechEd '99

Microsoft partnered with several vendors to develop new and enhanced products aimed at Windows NT and Windows 2000 customers.

Partner	Product/technology	What it does
IBM	Netfinity Availability Extensions for Microsoft Cluster Service (MSCS)	Can cluster eight NT nodes
NuView	Cluster X for Windows Load Balancing Services	Allows multiple clusters to be managed from one console
Sequent	Process Control Tool	Allows managers to assign various server processes to specific processors

MICROSOFT PLANTS ROOTS IN XML

Extensible markup language (XML) is becoming such an important standard that it will be a common thread through all of Microsoft's products, company officials say.

At its TechEd '99 conference, the company outlined its direction with XML, unveiled building blocks of its knowledge management framework and released a technical beta of Exchange Server. XML is a tagging system similar to HTML that provides data about data.

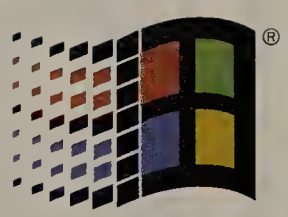
"XML will be a core part of all platforms and applications including Office, BackOffice, Visual Studio, Windows and MSN," says James Utzschneider, director of industry frameworks and BizTalk.

Microsoft also unveiled a product code-named Babylon that connects Windows applications to legacy databases by converting XML messages into legacy formats. It will also connect to BizTalk, a server that links electronic commerce sites. Microsoft also released the draft specification of the BizTalk framework and opened the BizTalk.org Web site.

The company laid out its "knowledge worker" strategy around Exchange. The plan includes the Digital Dashboard, a customized interface to a user's most-used resources, and Exchange Web Store, which makes the messaging server a Web platform. Microsoft also showed off document library and searching features for Exchange, code-named Tahoe. All those features will be available in the next release of Exchange, dubbed Platinum. Microsoft also announced a workflow designer tool for Office Developer, called Grizzly.

The company also made available its Microsoft Data Engine, a sort of lightweight SQL Server 7.0 database that can be used on offline devices.

— John Fontana



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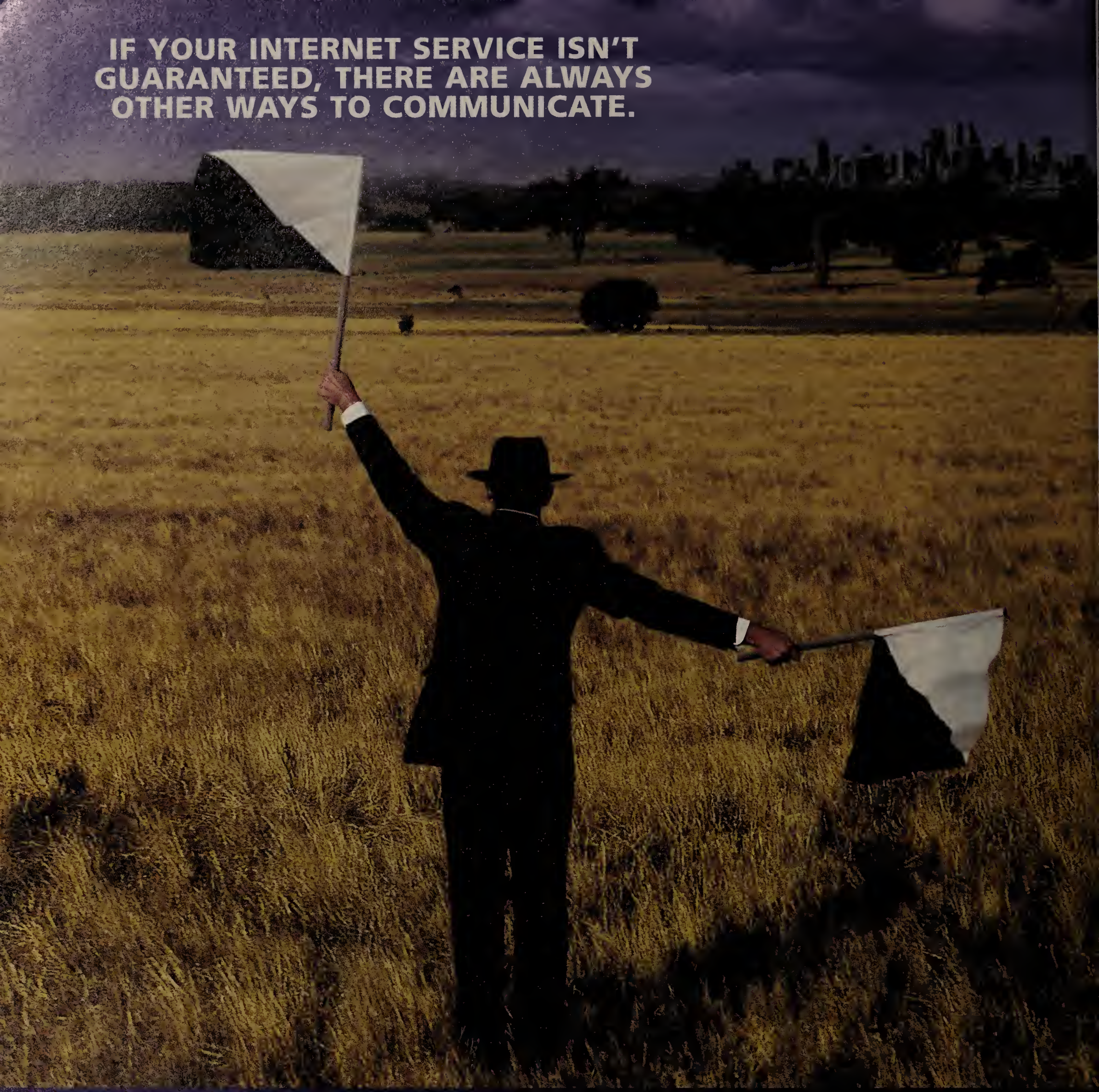

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Briefs

Pointing to continued demand for its NetWare 5 server and directory-related software, **Novell** reported second-quarter earnings of $39 million, more than doubling earnings of $19 million from the second quarter last fiscal year. Revenue for the quarter was $316 million, a 20% increase over the $262 million reported for the second quarter last year. Revenue from NetWare server software totaled $169 million in the quarter, up 41% from the second quarter last year. Directory-enabled applications grew 30% to $73 million. Service, training and consulting revenue was up 47% to $44 million.

D-Link has introduced a 10/100M bit/sec network interface card that simplifies the management of remote PCs. The 32-bit PCI card features a technology called Wake-On-LAN, which enables a net manager to turn remote PCs on from afar to make necessary software updates and to run diagnostics. Eventually, the technology will allow end users to access their PCs from Web browsers anywhere on a network. D-Link's DFE-540TX WOL 10/100 Fast Ethernet adapter has an estimated street price of $24.

D-Link: (800) 326-1688

Gateway has introduced its top-of-the-line server, a rack-mounted system that comes with up to four 500-MHz Pentium III Xeon processors. The rack-mounted ALR 9250R is 7 inches high and ships with a 4G-byte Ultra2 SCSI hard drive, 256M bytes of RAM and a 10/100M bit/sec network adapter. The server ships with Windows NT, NetWare or Red Hat Linux. A four-processor model starts at $11,600.

Gateway: (800) 315-2536

IBM puts up united server front

BY MARC SONGINI

The motto for IBM's server business these days could be e pluribus unum — out of many, one.

IBM, which claims to own one quarter of the server market with $10 billion in annual server revenue, is not ditching any of its four distinctive server platforms. But the company is doing more than ever to coordinate its mainframe, AS/400, RS/6000 and Netfinity technology development and sales efforts.

The goal? To be viewed as a single company that offers servers running everything from Web sites to legacy applications, rather than as four separate server suppliers each with its own agenda.

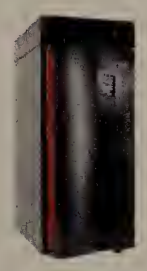
Here's a sampling of what IBM has done or is doing to further its cause:

- Opened a joint manufacturing and development facility for its server group (mainframes, AS/400s and RS/6000s).
- Training its sales force to sell all four server lines.
- Positioning all four lines as e-business servers by speeding their IP stacks, improving their I/O capabilities, adding network interface cards and more.

See **IBM**, page 22

IBM's PC server resurgence

Although IBM has been strong in the high-end and mid-range server markets . . .



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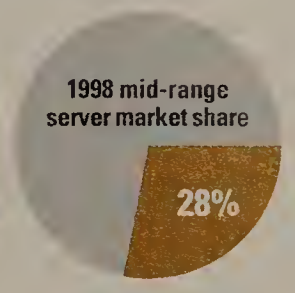
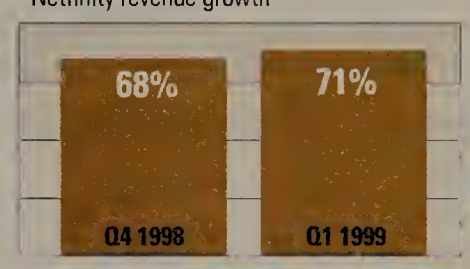


. . . its PC server business has been lagging . . .

Netfinity server

. . . however, IBM may be rounding the corner in this market.

*Netfinity revenue growth



*Percentage represents growth from previous quarter's revenue.

SOURCES: IDC, FRAMINGHAM, MASS; IBM, ARMONK, N.Y

Cisco unveils stackable switch line

Catalyst 3500s aimed at small and mid-size businesses.

BY JIM DUFFY

SAN JOSE — Cisco's first stackable switches are designed to provide users with increased port densities through a variety of configurations, including stacking geographically dispersed switches.

Cisco last week announced the Catalyst 3500 XL LAN switch line, which features three stackable models for backbone, desktop and aggregation switching in small and mid-size businesses. Cisco also announced a proprietary interface for stacking the switches and software for configuring switches into single IP domains.

Each member of the Catalyst 3500 XL line sports Gigabit Interface Converter (GBIC)-based Gigabit Ethernet ports. GBIC technology supports interchangeable physical media interfaces.

The 3512 features 12 10/100M bit/sec Ethernet ports and two GBIC-based Gigabit Ethernet ports. The 3524 sports 24 10/100 ports for desktop connectivity and two GBIC-based Gigabit Ethernet ports for server and switch connectivity. The 3508 features eight GBIC-based Gigabit Ethernet ports for linking other 3500 XL switches into a localized stack or distributed cluster.

Each GBIC slot on the new 3500 XL switches or existing Catalyst 2900 XL switches can hold a Cisco-developed hardware interface specifically for Gigabit Ethernet stacking. Users can daisy chain up to nine switches via Cisco's new GigaStack GBICs.

For grouping distributed switches into a single cluster, or domain, Cisco rolled out Cisco Switch Clustering software. This software lets users group up to 16 geographically dispersed switches, or 384 switch ports, into a single domain.

"The switches can be managed over a single IP address," says Walter Miller, manager of technology and infrastructure at Business Resource Group in San Jose. "I use a single address to get to the cluster and then manage all the switches in the cluster."

The Catalyst 3500 XL line is priced from roughly $2,500 to $5,500, including the clustering software. The switches are available now. The GigaStack GBIC costs $250 and will be available in June.

Cisco: (408) 526-4000

Microsoft tool monitors NT server availability

New Uptime utility for NT 4.0 and Windows 2000 nets being offered for free.

BY JOHN FONTANA

REDMOND, WASH. — Microsoft last week released a tool that will let network administrators measure and track the availability of their Windows NT 4.0 servers from a single point.

The tool, called Uptime, sports a command-line interface that lets users measure the availability of a single server on a recurring basis. Availability refers not only to a server being up and running, but also to it's ability to handle additional requests and data.

The tool ties together a number of individual monitoring statistics found in NT's event logs. Previously, network administrators had to perform the time-consuming task of collecting data from event logs and dumping it into a spreadsheet for analysis.

This is the first tool from Microsoft that automates the process and allows network administrators to calculate a specific number that reflects server availability. Some larger network management packages from third-party vendors, including BMC Software and NetIQ, contain similar features.

Uptime is being offered at no charge and runs on NT 4.0 with Service Pack 4 or higher and the forthcoming Windows 2000. Network administrators may find Uptime to be an inexpensive way to monitor availability in test environments using Windows 2000 Beta 3.

"This is just the kind of utility Microsoft needs to supplement the base operating system code," says Dwight Davis, an analyst at Summit Strategy. "NT is thin on these kinds of tools. As NT tries to move into that glass-house realm, anything that Microsoft can do to support those environments is critical to users."

The utility scans the event logs and gathers data to compute an availability number. The numbers Uptime generates can be used as a foundation to gauge improvements or declines in the availability, or health, of the server and also to test whether mechanisms put in place to increase uptime actually produced the desired results. Network managers also can periodically run the tool to identify trends related to availability.

"This helps IT create an environment for measuring availability and for establishing monitoring controls," says Michel Gambier, product manager for NT server. "This is a first step. It needs better multinode support, but these are the types of tools we will put out to manage availability."

Uptime can be downloaded from Microsoft's Web site by clicking the downloads tab at www.microsoft.com/ntserver. ◪

Server check

Microsoft last week released a free utility called Uptime that allows network administrators to check the status of their servers on an individual basis. Here is a sample of output generated by Uptime regarding a Windows 2000 server:

Current system uptime:	9 days, 7 hours, 6 minutes, 52 seconds
System availability:	99.8989%
Total uptime:	15 days, 21 hours, 49 minutes, 30 seconds
Total downtime:	0 days, 0 hours, 23 minutes, 11 seconds
Total reboots:	4
Mean time between reboots:	3.98 days
Total blue screens:	0

IBM,
continued from page 21

- Sharing technologies, such as IBM's patented copper chips, across servers.

Reworking its server strategy is essential for IBM, given the increasingly competitive nature of the market, says Bob Djurdjevic, an analyst with Annex Research in Phoenix.

Hardware costs — as well as server profit margins — are being pared down all the time, Djurdjevic says.

"Today, to be in the server business means you have to be on the defensive all the time," he says.

While overall IBM server group sales are up, price competition has resulted in lower revenue and flat year-to-year earnings. And server revenue as an overall percentage of IBM's revenue actually slipped last year to 12% from 13% the previous year.

The company hopes that sharing resources across its server lines will help the company save money, boost profit margins and set its products apart from the competition.

For instance, taking a mainframe technology such as Enterprise Systems Connection (ESCON) and adding it to a Netfinity can separate IBM's PC server line from an all-too-similar pack of competitors.

Of course, the technology sharing will further blur the lines between one IBM server platform and another. For instance, the distinction between a high-end Netfinity and low-end AS/400 is becoming less clear, as is the difference between a top-of-the-line RS/6000 SP and a mainframe.

This overlap raises questions about whether IBM would consider consolidating its four main server lines into three or fewer, but IBM officials pooh pooh such talk.

"The answer to customers' needs is not just one technology," says Susan Whitney, an IBM vice president. "It can't all be Unix or all NT."

IBM is the one server company that can handle the diverse needs of really big companies, says Tony Genoble, a senior IT manager at Nabisco. Genoble oversees a network with 9,000 desktops and a variety of applications running on machines such as S/390s, RS/6000 SPs and AS/400s. Nabisco probably would have gone with Netfinity servers, as well, but they weren't available at the time Nabisco made its PC server acquisition, he says.

IBM's server selection is a big plus, agrees Joe Makoid, a vice president at Bus-Tech, an IBM partner as well as S/390 and Netfinity user. "If a big enterprise shop with a mainframe wants to buy an NT server, all things being equal, why not IBM?" ◪

IBM'S SERVER NATION

IBM may be emphasizing the integration among its servers these days, but the company's four primary server lines still have their own personalities. Here's the latest on the four lines:

S/390

IBM recently announced the S/390 G-6, which the company claims can deliver 50% more MIPS than its predecessor, the G-5, which itself boasts new high performance CMOS chips that rival those from Hitachi.

IBM is looking to its new mainframe technology to convince customers to go with S/390s rather than top-of-the-line Unix machines from the likes of Sun and Hewlett-Packard.

IBM's high-end server business, including mainframes and some AS/400s and RS/6000s, currently boasts about $6 billion in annual sales. IBM sold 60% more mainframe MIPS last year than it did the year before, though revenue grew less than 20% year over year as a result of heavy discounting in the face of price competition.

AS/400

IBM doesn't break out revenue figures for individual server lines, but many analysts estimate that the AS/400 is IBM's hottest seller.

High-speed processors, called Northstars, and a revised version of the AS/400's proprietary operating system have fueled sales, according to IBM. The new edition of the OS/400 operating system has been fine-tuned to run Domino and Java Web applications, and users of those software platforms have found that a draw. In addition, IBM is offering a plug-in Intel processor card for the AS/400 that can be used to run NT applications.

IBM has even been so bold with the AS/400 line to come out with an entry-level model to compete with Compaq's ProLiant systems. However, IBM denies that the $7,000 version of the AS/400 competes directly with the Netfinity.

Netfinity

Although Compaq sells twice as many PC servers, IBM doesn't feel too bad — after all, Netfinity was a latecomer to the Intel-based server market. And lately, Netfinity has been coming on strong, with shipments growing about 70% quarter to quarter for each of the last two quarters.

IBM has tried to make the Netfinity stand apart from other PC servers by adding to it technology that is typically found in higher-end machines. For instance, IBM is enabling Netfinity machines to handle more storage and is moving away from a shared bus to a switched fabric that can keep pace with 64-bit applications and Gigabit Ethernet traffic. IBM has also delivered technology for directly connecting Netfinity servers to mainframes and RS/6000 clusters.

RS/6000

While the move to PC servers running Windows NT has helped to drive Netfinity sales, it has hurt sales of IBM's Unix-based RS/6000 servers. The brightest spot for the RS/6000 line, analysts say, has been the company's SP models, which can be linked into clusters packing the power of supercomputers.

— Marc Songini

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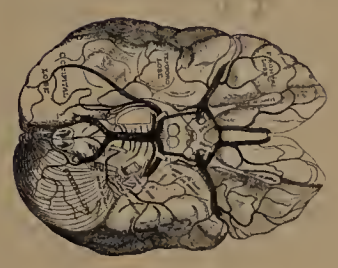

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Internetworking Monitor . Kevin Tolly

CONVERGED TELEPHONY IN 1999?

Telephony, or voice communications, is always on the list of soon-to-be-converged technologies. The problem is that it is rarely clear which aspects of voice communications are included in references to convergence or even whether local or wide-area telephony is concerned.

The sheer number of traditional network companies that are earnestly embracing telephony requires that we pay attention to this area.

As fundamental, ubiquitous and well-known as telephony is, when it comes to integrating telephony into a previously data-only infrastructure, there is a great deal of confusion. This confusion extends even to terminology. Some take IP telephony to mean, specifically, Internet telephony — placing phone calls across the packet-based Internet. Others might use the same term when referencing an approach that uses a standard, packet-forwarding campus data network to handle voice traffic in addition to file, print and application services.

IP telephony and campus IP telephony are meant to save money but in different ways. Internet-style IP telephony saves on usage costs. Internet pricing is neither distance nor time-sensitive.

Campus IP telephony, in which connection costs are nil, concentrates more on combining voice and data traffic to run over a single communications infrastructure. In this scenario, even the cabling is converged. The Category 5 LAN cable that connects your PC to the LAN switch in the wiring closet becomes the new transport for your voice calls. IP telephones are plugged in to an adapter resident in your PC and run in conjunction with software that executes under a Windows 98 or NT system.

Among other things, that software turns voice into data packets and ships them out to a PBX-like device that is, in turn, connected to the LAN switch network. Imagine your office telephone with the same reliability as your Microsoft operating system.

Even on the campus, though, there are multiple working definitions of voice/data convergence. Many see simply what I'll call platform convergence. The campus voice and data networks can still remain separate, but the file server and PBX now become one box. The alleged benefit: One box costs less than — and takes up less space than -- two.

The rise of the standards-based PBX is the force behind this type of convergence. A number of vendors, traditional and start-ups, now offer what amounts to a PBX-on-a-board. The hardware function needed to implement a PBX is built onto a board that slots in to a PC.

For the moment, converged telephony seems best suited to small branch offices in which network managers deem that the cost differences between, say, stand-alone and PC-based PBXs justify breaking new ground and potentially lowering availability to NT levels.

On the campus, though, such nascent technology is still too unproven for network managers to consider doing away with the central PBX or the separate wiring network that it requires.

Tolly is president of The Tolly Group, a strategic consulting and independent testing firm in Manasquan, N.J. He can be reached at (732) 528-3300, ktolly@tolly.com or www.tolly.com.

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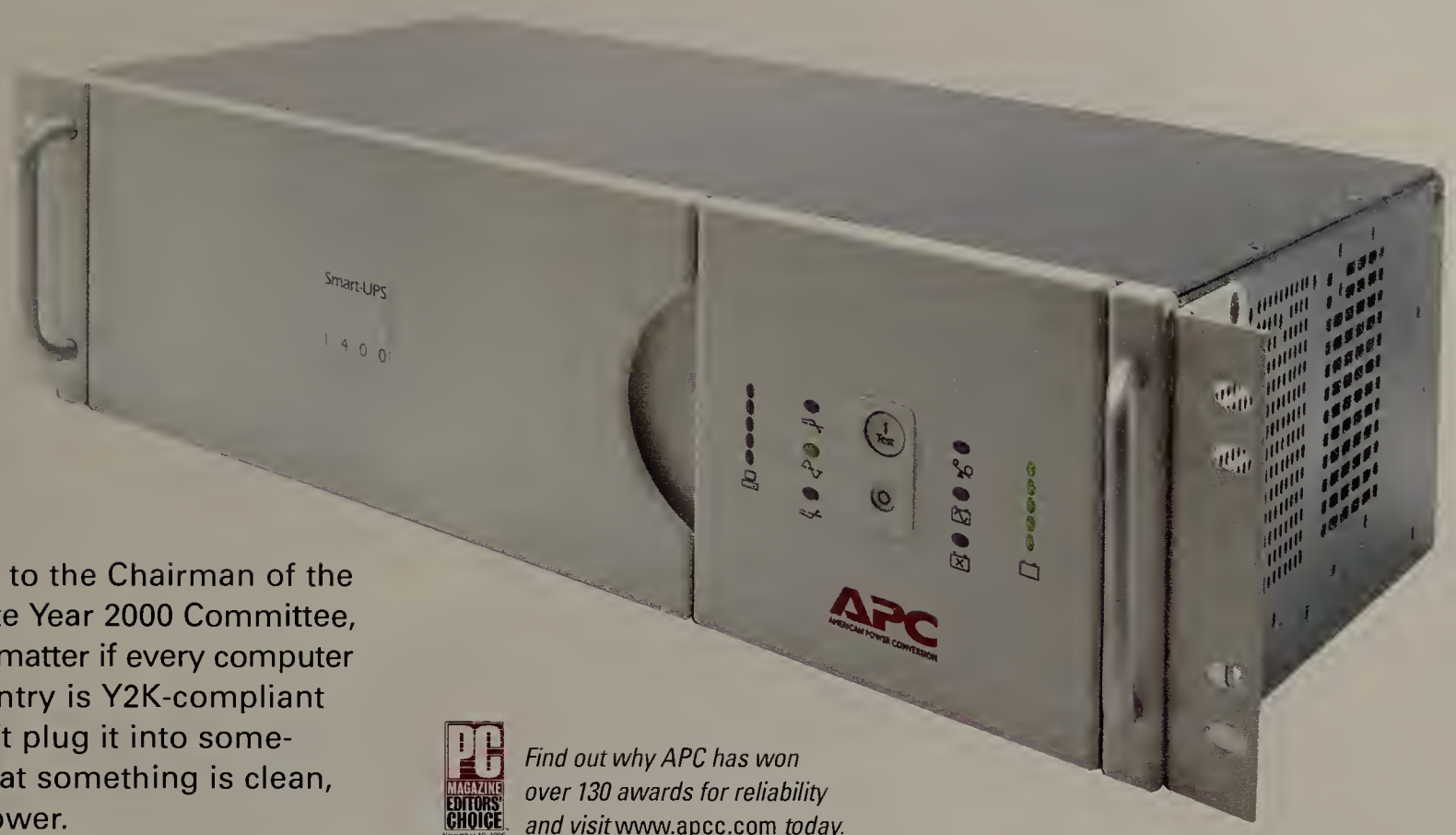

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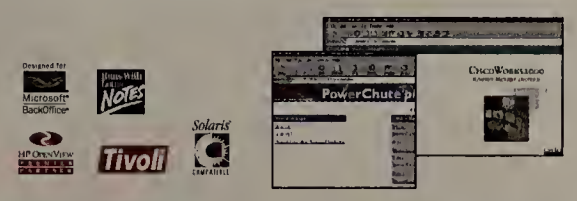

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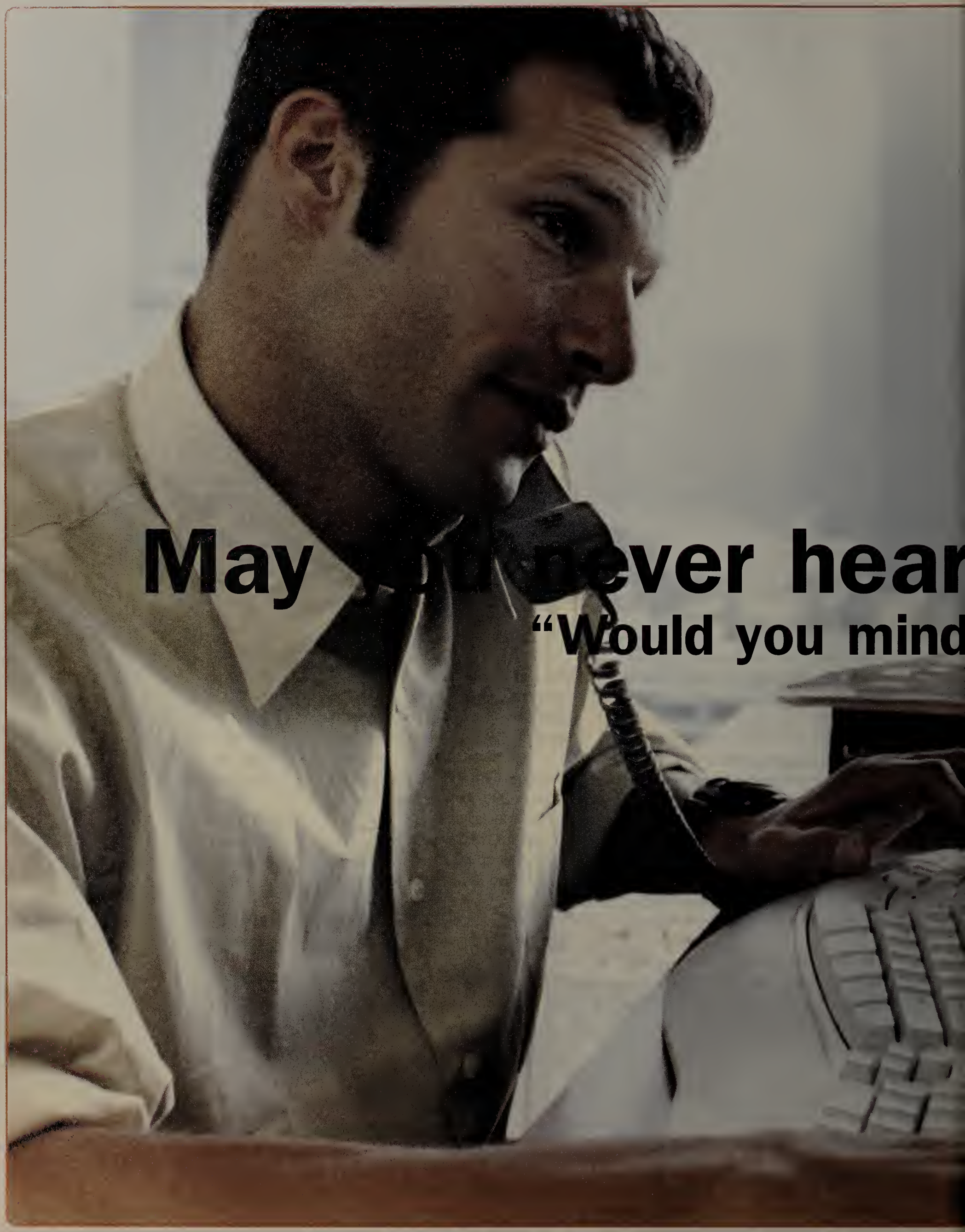
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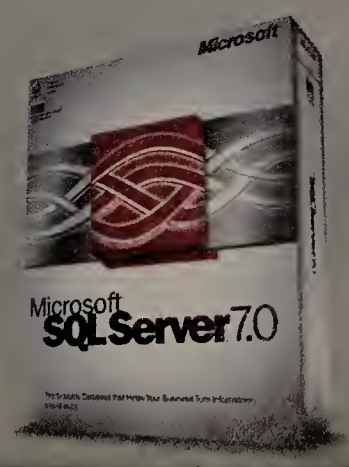

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VPNs are easy — once you get the clients installed

BY TIM GREENE

The big draw of using virtual private networks (VPN) for remote access — tying more end users into your corporate network — is also one of the big drags.

After all, the more end users you tie in, the more remote client software you'll need to manage.

Network executives have to consider how to distribute, install, maintain and upgrade VPN client software. In a VPN with thousands of users, that can be an unwelcome necessity.

VPN vendors are well aware of the client management problem and are working to fix it. Many vendors make client software available as Web downloads, include wizards to steer end users through the installation process and update the software as users log on to the corporate network.

Companies have started to turn to VPNs as a way to use the Internet as a WAN connection for remote access. That means using authentication, authorization and encryption to set up secure links, called tunnels, over the Internet. Client software on remote PCs is needed to handle all that security.

The simplest client to use is one that is already distributed within the operating systems used by the remote PCs.

Microsoft Windows 95, 98 and NT, for example, all support a VPN tunneling technology based on the Point-to-Point Tunneling Protocol (PPTP). This protocol encrypts packets and wraps them inside an IP datagram for transport across the Internet.

But many users think PPTP is not secure enough for sensitive corporate data and instead use IP Security (IPSec), a stricter standard for authorization and encryption over VPNs. IPSec is not yet embedded in any vendor's operating system, so using the security technology requires separate client software.

Distributing clients

The first hurdle users face is distributing the VPN software to client machines. This can be done via disk, e-mail or as a download from a Web server.

Disks work well if a company's IS staff is installing the client technology, but this method requires site visits or bringing all the PCs to a central location, according to Eric Zines, an analyst at TeleChoice. Either of these processes can turn into a logistical nightmare.

Network managers could send the disks to end users, but this would require end users to install the software themselves. Installation could be beyond their capabilities, Zines says. The same would be true of installing the software if it were sent as an e-mail attachment.

As a result, many VPN vendors have introduced ways to download client software from Web sites.

VPNet, for example, offers DynaPolicy Download, which automatically distributes clients and client policies. From a central server, network administrators set the parameters defining each end user's remote access rights.

Users fetch the client from a corporate intranet Web server, which is protected by a password. If the client changes, it has to be reinstalled. VPNet is trying to streamline that process.

This fall, VPNet plans to upgrade its distribution software to signal remote users that a new client is being downloaded, says Richard Kagan, a VPNet vice president.

Enterprises prefer to establish a standard PC platform for all their end users and install the VPN client software before issuing the machines. For example, Verisign is setting up a VPN for hundreds of users and is preconfiguring PCs with SoftPK clients made by Information Resource Engineering (IRE). The machines are then shipped to end users, according to Marshall Behling, Verisign's strategic business developer.

This is a safe way to go, says John Summers, senior product marketing manager for GTE Internetworking, which provides a managed VPN service. PCs need certain minimum hardware and software to support VPN clients, so making sure those requirements are met in advance makes sense, he says.

But this is not always possible. Once a PC is in use at a remote site, it is sometimes difficult to schedule time to take the machine down for an upgrade.

Because GTE manages clients for its customers, the service provider wanted to update customers' PCs in a way that is simple for end users.

GTE developed VPN Advantage Prep Tool, software that inventories remote PCs to determine what software they lack. The tool then directs users to Web sites from which they can get the appropriate downloads.

For example, the client GTE uses for its service is TimeStep's Permit/Client. This client requires a Windows 95 upgraded to include WinSock 2 software, which lets Windows programs interface with TCP/IP networks.

If WinSock 2 is missing, the VPN Advantage tool redirects remote users to the Microsoft Web page from which they can download the necessary software. Once the PC meets the specifications, VPN Advantage downloads Permit/Client. GTE launched the installation tool with its service three weeks ago.

Cracking the code

Beyond simply downloading software to the client, end users also have to register their encryption schemes so their coded messages can be deciphered by corporate servers.

IPSec uses encryption keys — strings of numbers used in conjunction with an encryption algorithm — to secure data.

Both ends of a VPN connection need to share keys to successfully pass data.

Passing keys between clients and central-site VPN gear requires the use of a certificate authority that stores users' keys and issues digital certificates that verify users' public keys to other users.

Managing the key process is tedious if done manually. That's why companies such as IRE and Verisign are working together to automate the process using certificate enrollment protocol (CEP).

Other vendors, including Network Associates, will have similar CEP tools by the end of the summer, Verisign's Behling says.

Microsoft plans to integrate an IPSec client with Windows 2000 to eliminate much of the concern about distributing VPN clients, according to Greg Marcotte, a vice president for VPN vendor Altiga. When that happens, VPN vendors will be able to exit the client business.

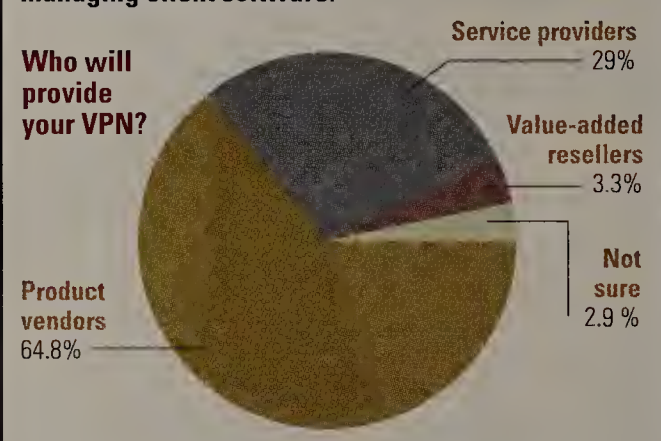
But, of course, not all enterprises upgrade quickly to the latest operating system or even use Windows on the desktop. So distributing VPN clients will remain an issue for VPN users and vendors for quite some time. ◪

VIRTUAL PRIVATE NETWORKS

Distributing, installing and maintaining VPN clients can be a challenge.

Do-it-yourself VPNs

While some users will outsource their VPNs, most will buy equipment and build their own — which means they will have to deal with distributing and managing client software.



Based on a survey of 210 IT professionals who are planning on, or are in the process of, implementing VPNs.

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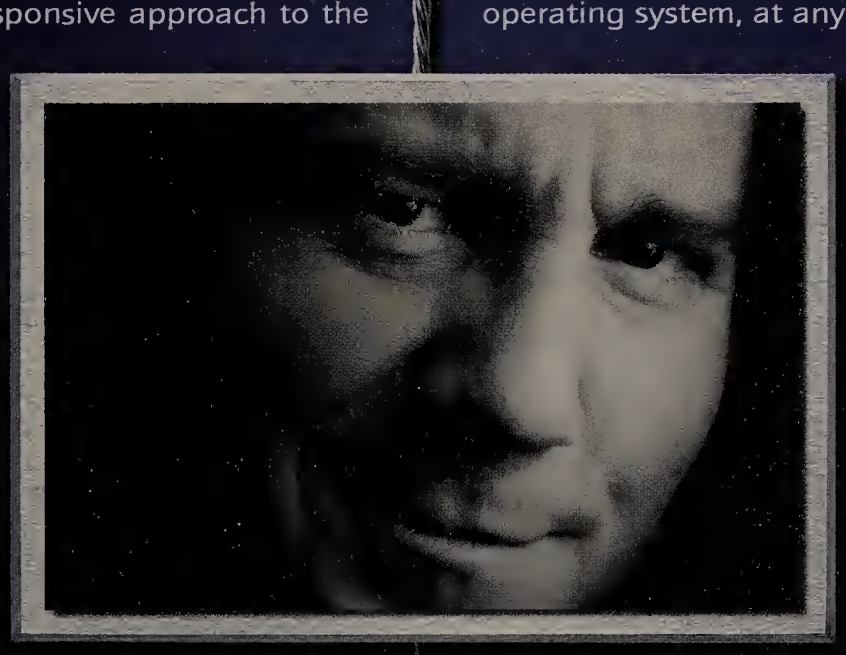

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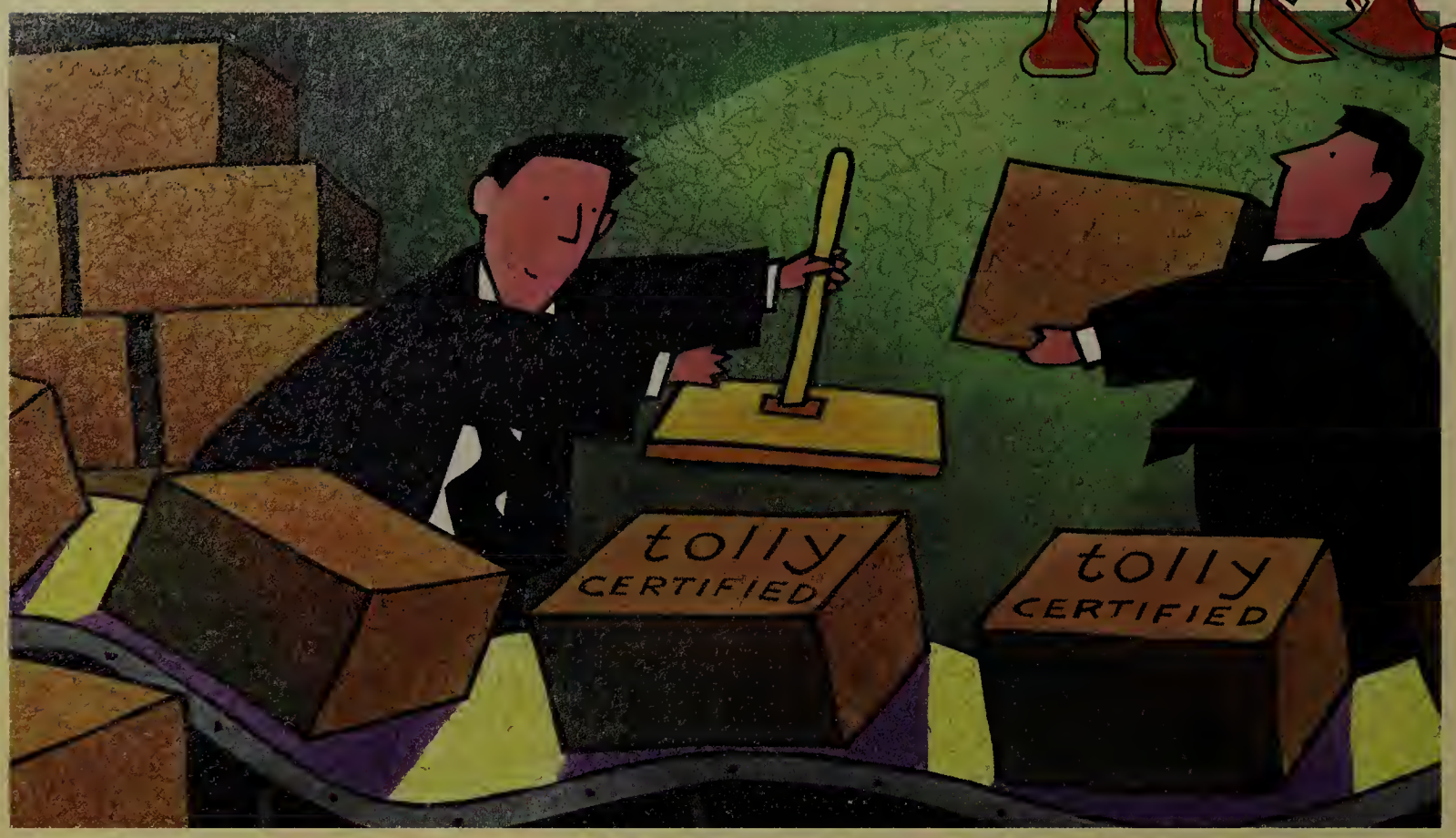

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Digital subscriber line (DSL) competitive local exchange carrier **Rhythms NetConnections** last week said it will use MCI WorldCom's and Qwest's networks to provide ATM and frame relay services for enterprise network and ISP customers. MCI WorldCom holds a 7.5% stake in the firm, with Qwest holding a 2% stake. Rhythms offers DSL and T-1 last-mile connections to corporate users and ISPs in 12 markets. The company says the deals will help it link existing services with services planned for 33 metropolitan areas this year.

AboveNet last week acquired the Palo Alto Internet Exchange (PAIX) from **Compaq** for $75 million. Compaq gained control of PAIX, where Internet traffic from multiple ISPs is swapped, after Compaq acquired Digital last year. The deal consists of about $70 million in cash and an estimated $5 million worth of ongoing services that will be provided to Compaq. PAIX, along with MAE-East, MAE-West and Network Access Points, is one of many Internet exchange points located in cities around the world.

Congressional bills have surprise backer

Big telcos seek freedom to offer all data services over long-distance lines and without resale rules.

BY DAVID ROHDE

WASHINGTON, D.C. — Quiz: What key industry segment is pushing three new telecom bills that were introduced in Congress this month? Hint: The bills are called the Internet Regulatory Freedom Act of 1999, the Broadband Internet Regulatory Relief Act of 1999 and the Internet Growth and Development Act of 1999.

Surprise! The big backers of the bills are not ISPs, but their long-time nemeses the regional Bell operating companies, which now claim to be champions of the Internet.

All three bills would amend the Telecommunications Act of 1996 to let RBOCs shuck federal regulations not only on Internet offerings, but also on all their data services. The five Big Bells and other dominant local carriers would be able to offer frame relay and ATM over long-distance lines, become Internet backbone providers and offer widespread digital subscriber line (DSL) services without reselling the services to competitors — all before they obtained regular long-distance authority from the Federal Communications Commission.

As a result, the bills could immediately let users extend their RBOC data networks beyond metropolitan calling boundaries called local access and transport areas (LATA). But no corporate user groups have stepped forward to support the bills.

And ISPs and long-distance carriers that want RBOCs to meet a rigorous local-competition checklist before they begin any long-distance transport are stepping forward to try to stop the legislation.

"These bills aren't really about the Internet," says Eric Lee, public policy director for the Commercial Internet Exchange Association, the leading ISP trade group. "These issues are being RBOC-driven, and the real beneficiaries are the monopoly telcos."

Indeed, US WEST CEO Solomon Trujillo spoke up in favor of broadband-data deregulation last month at a congressional hearing just before the three bills were introduced. And the bills have some heavyweight backers, including Sen. John McCain (R-Ariz.) — who is expected to run for president — and Rep. Rick Boucher (D-Va.), a co-founder of the House Internet Caucus.

The three bills differ in some details, and they do not propose an absolutely complete deregulation of RBOC data services. For example, in the bills sponsored by Sen. Sam Brownback (R-Kan.) and Boucher, the RBOCs would still have to provide DSL-conditioned local loops to competitors in much of their territory, although they would no longer have to resell their full DSL offerings.

But opponents are concerned that any loosening of data-services regulations could extend beyond the broadband market and let RBOCs avoid the entire FCC long-distance application process. That's because two of the bills, instead of specifying that services would be deregulated only if they involved true data transport, seem to allow for the possibility of carrying voice over deregulated data networks (see graphic).

"The definitions are disingenuous," Lee says. "I'm surprised that Sol Trujillo could say at the hearings with a straight face that we're only talking about data. Once the government starts in this direction, there's going to be a lot of mischief."

Brownback's bill allows RBOCs to provide data services across LATA boundaries while keeping voice calls tightly within the LATA restriction. In fact, it's known as the "data LATA" bill on Capitol Hill. Opponents argue that RBOCs don't need interLATA authority to roll out DSL services.

"For DSL, the interLATA restriction poses very little problem," says Rick Whitt, senior policy counsel for MCI WorldCom, which also opposes the bills. ◪

Data deregulation heads to Capitol Hill

Three congressional bills aim to make it easier for RBOCs and other large telephone companies to offer high-speed data and Internet services.

Name of bill:	Internet Regulatory Freedom Act of 1999	Broadband Internet Regulatory Relief Act of 1999	Internet Growth and Development Act of 1999
Sponsors:	Sen. John McCain (R-Ariz.)	Sen. Sam Brownback (R-Kan.)	Rep. Rick Boucher (D-Va.) and Rep. Bob Goodlatte (R-Va.)
Services to be deregulated:	Any packet-switched service, IP or otherwise	Services of at least 200K bit/sec downstream and 128K upstream	Services of at least 200K bit/sec in at least one direction
RBOCs data resale requirement:	None; RBOCs do not have to resell any qualifying data service.	Must make 70% of its local loops DSL-capable	Must provide DSL-conditioned loops to competitors; state must approve RBOC's "broadband plan"
RBOCs may offer long-distance on:	Any service that is not purely voice	(No long-distance provision)	Any Internet or packet-switched service except two-way voice

Eye on the carriers . David Rohde

THE SEAMLESSNESS STAKES

You can expect a wave of new international service announcements from AT&T, MCI WorldCom and Sprint this summer or fall. That's welcome because the Big Three have a lot of explaining to do following their recent game of international musical chairs. Their deals have grabbed the business headlines, but global rivals Infonet and Equant have been pushing real services that are available now.

AT&T has to integratc Concert, IBM Global Network and its Asian partnerships into a unified whole with consistent, meaningful service-level agreements (SLA). MCI WorldCom has to keep pushing ahead on its On-Net global buildout to replace the loss of the British Telecommunications tie. Sprint has to explain how Global One can thrive while its two European partners sue each other in international court.

No doubt the Big Three will bandy about the word "seamless" to describe whatever new offerings they develop. But now that we've basically entered a second round of global ventures, perhaps it's time to hold them to a stricter definition of this often-misused term.

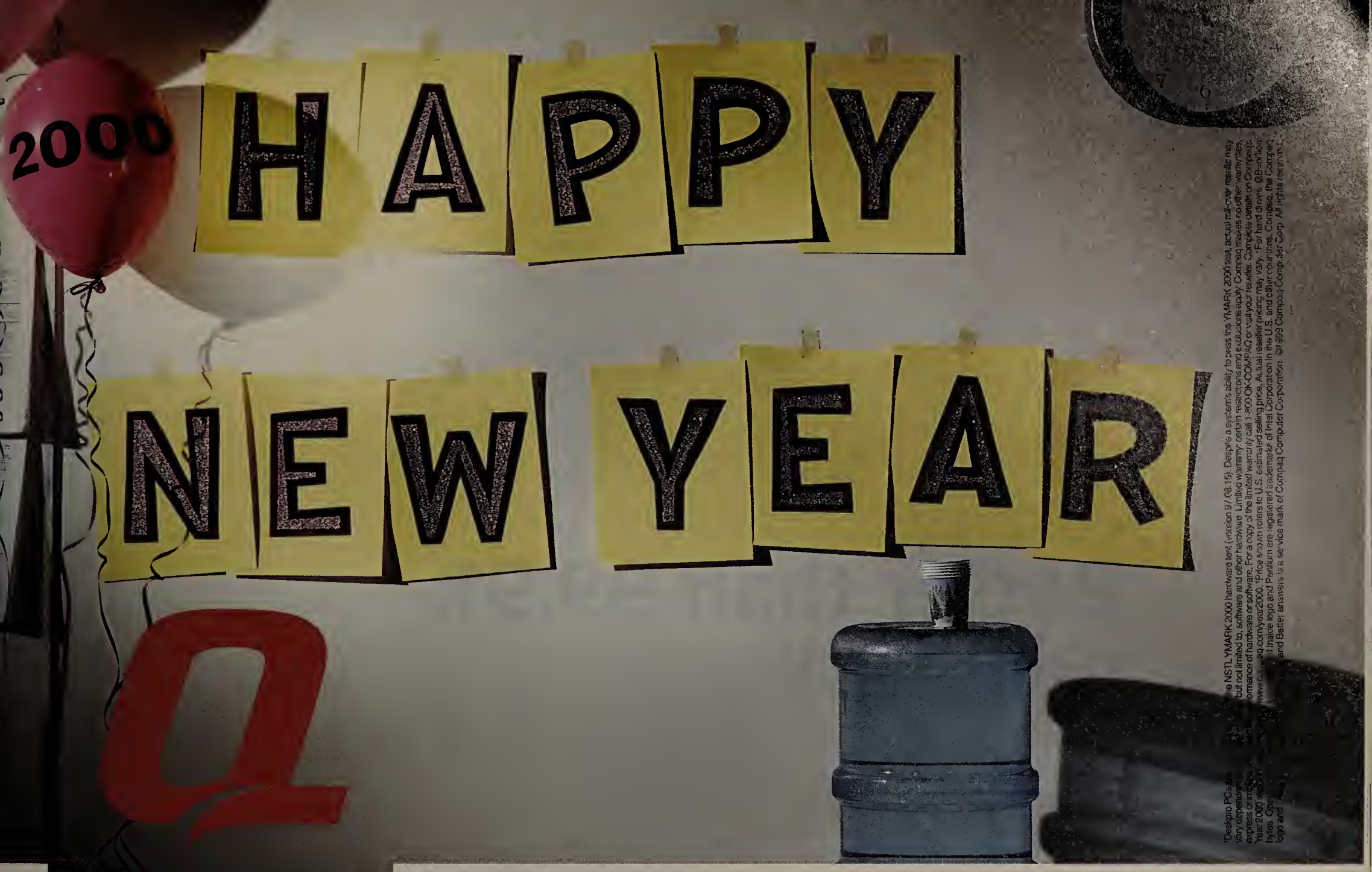
Originally, seamless meant a service offering with feature transparency — a net that could do exactly the same things for users no matter where they were located. But over time, seamless came to mean little more than "a service that works." Even as carrier alliances built patchworks of, say, frame relay networks using different vendors' switches from different generations connected by network-to-network interconnections (NNI) at bottleneck gateways, they attached the word seamless to the resulting offerings.

I'm sorry, but that's a network with several seams in it. Not that there's anything wrong with that. But seamless should mean more than merely the ability to pass traffic from one end of a network to the other. It should mean:

- Identical port and circuit policies everywhere. If you can oversubscribe your network to save money — say attach 48 branch-office 64K bit/sec circuits to a single T-1 hub-site port, rather than 24 — in one continent, you should be able to do the same elsewhere.
- The ability for the global carrier to "see" all the way through the network to identify faults, issue standard SLAs and eliminate finger-pointing. Even better, user management modules, including those with Web interfaces, should provide a real-time picture of circuit status and the ability to change subscription levels.
- Standardized service and support levels throughout the world, rather than blaming local cultures for failure to respond to alarms (something users hear too often).

Some carriers say they're standardizing switch platforms globally — for all of MCI WorldCom's domestic merger-related migration headaches, you have to give them credit for having a plan to use, say, one ATM switch worldwide. Other carriers claim that NNIs are more robust than they used to be and can now accommodate feature-sharing among dissimilar switches. Well, fine. If that makes a service truly seamless, then by all means say so. Otherwise, it's time to find a different adjective to describe the global network. How about "workable"?

Rohde is a senior editor with Network World. *He can be reached at drohde@nww.com.*



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Briefs

With CEO Lewis Platt on hand, **Hewlett-Packard** recently pushed its much-vaunted e-services strategy forward by spotlighting new business partnerships to build application-service portals. HP has a deal with Qwest to build an "apps-on-tap" application portal based on the SAP AG and Siebel Systems applications. The portal will debut later this year. HP says it has also concluded a similar pay-as-you-go application portal arrangement with Microsoft for Exchange and the BackOffice Suite. In addition, HP is pushing a software technology called e-speak, which will form a middleware layer to broker e-service transactional requests. Rajiv Gupta, general manager of HP's Open Services Operations, says e-speak will include language-independent high-level service calls. E-speak will not be made available for free use until year-end.

Brokerage **Charles Schwab & Co.**, which last fall entered into a content-sharing deal with Web portal Excite.com to provide investment information, will offer a personalized Web service via Excite called MySchwab. This free service for Schwab and non-Schwab customers will provide customized investment information for the user as well as "lifestyle information," including local events.

Eprise has shipped a Web content-management software package, Eprise Participant Server 2.0. When loaded onto a Web server, the product sets up an approval and workflow process to let designated employees — not just the Webmaster — publish content. The software, which costs $50,000, adds support for Extensible Markup Language for sharing XML-based data between servers.

IN-SITE: *Lessons from Leading Users*

Overhauled aeronautic net secured by IPSec

BY ELLEN MESSMER

ARINC runs one of the world's largest and oldest networks on behalf of the airline transportation industry. Now ARINC's network, the Aeronautic Telecommunications Network (ATN), is getting a complete make-over for the new millennium.

ARINC this month decided to migrate the multiprotocol ATN into an IP network protected at all points around the globe by virtual private network (VPN) gear, says Mike McShea, the company's director of network and security architecture.

Consolidation is key

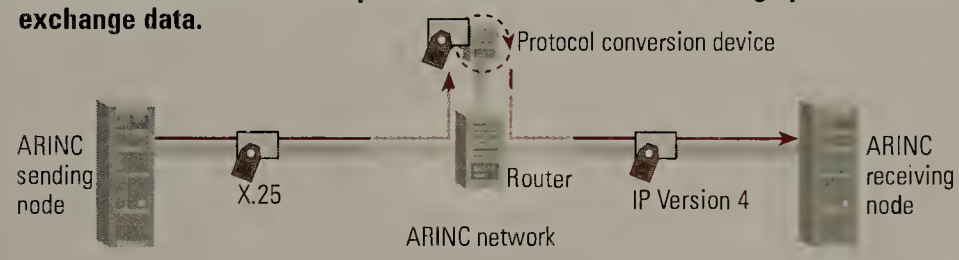
"What we're looking to do is have a consolidated network architecture," says McShea, noting that the move to IP Version 6 should simplify management chores a great deal. Currently, ARINC's sprawling network of T-1 lines around the world supports everything from older X.25 to more arcane and industry-specific protocols called 85-A1 and SLC. The network is used for communicating among thousands of airlines, manufacturers and airports.

McShea hopes to exploit the latest

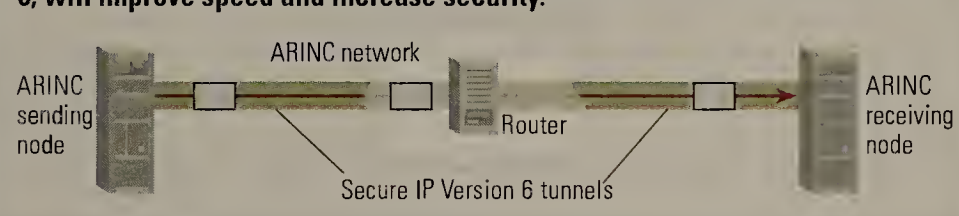
See **In-Site**, page 38

ARINC's network — today and tomorrow

In the current ARINC network, which uses many different protocols, packets must be converted from one protocol to another when differing systems exchange data.



Under the planned VPN network, all data in the ARINC network would travel over secure, encrypted VPN tunnels. Standardization on one protocol, IP Version 6, will improve speed and increase security.



'Scanner' eyes Y2K bugs in e-mail attachments

BY PAUL MCNAMARA

CUPERTINO, CALIF. — A joint offering from Trend Micro and Centennial will help organizations detect Year 2000 problems inside e-mail attachments before the attachments enter or leave corporate networks, the companies claim.

Called Y2K Scanner, this plug-in server module from Centennial works with Trend Micro's InterScan VirusWall to discover Y2K flaws in files created by spreadsheets, such as Lotus' 1-2-3 and Microsoft Excel, as well as files from databases, such as Microsoft Access and Inprise's dBase. Once the module identifies a problem, InterScan automatically notifies the network manager, the message sender and the recipient. Defects can be fixed using another Centennial product, Centennial 2000 Pro Enterprise edition.

One Y2K expert says the Trend-Centennial offering will be a useful addition to the corporate Y2K toolbox because it addresses a risk that many have ignored.

"The products in this market have focused either on individual objects or very specific processes between industries," says Norbert Kriebel, an analyst with Giga Information Group in Cambridge, Mass. "There hasn't really been anything done to look at the unwashed masses of information that flow in and out of an enterprise" via e-mail attachments.

However, not every organization will require this level of protection, according to Kriebel.

"If you're an enterprise that is doing just basic text e-mail back and forth, chances are you're not going to run into any problems here," he says. "But if you're an enterprise that depends heavily on e-mail for file transfers, then it's an issue" that needs to be addressed by a product such as Y2K Scanner.

The Y2K Scanner module is scheduled to ship early in the third quarter and will be available through Trend distributors for a per-seat price that starts at $3.50 per user for up to 50 users.

Trend: (408) 257-1500

'Net cache speeds response time

BY ROBIN SCHREIER HOHMAN

SUNNYVALE, CALIF. — CacheFlow's new high-end caching appliances may help provide bandwidth and speedy access for network managers building Web front ends for large enterprise applications and network services.

The CacheFlow 5000 series dedicated Internet accelerators come in chassis-like units and can scale up to OC-12 — higher than any other caching device on the market, the company claims. This will let network executives use application service providers, thin clients and other means to move enterprise systems off the desktop and onto the network.

The 5000 has an expandable multiprocessor platform and consists of a base unit and add-on expansion trays. The base unit has a motherboard and power supplies. The expansion trays contain disk drives and memory, and scale from T-3 to OC-12 speeds. The base price for a T-3 system, which is nearly 45M bit/sec, is almost $80,000. By contrast, CacheFlow's entry-level CS-100 supports speeds up to 1M bit/sec and costs $8,900.

CacheFlow has begun calling its products Internet accelerators instead of caching devices because the dedicated operating system also speeds the delivery of Web pages that aren't yet in the cache.

"A traditional cache is designed to save bandwidth, not reduce response time," says Kelly Herrell, vice president of marketing.

The new CacheFlow devices speed response by opening multiple links to servers, instead of one link at a time. When a user enters a URL in a browser, the browser typically goes through the Internet to request that page from the server. If a page has 30 objects on it, including text, graphics and video, the browser would have to open and close 30 connections to get all the objects. CacheFlow instead opens multiple connections simultaneously, which causes the page to be delivered to the browser much faster.

Initially, the 5000 series will sell to Internet backbone providers, but in the coming year, some analysts see the big boxes moving to the enterprise.

"The big market that we see for caching in the enterprise will come as all of the business systems get Webified," says Peter Christy, principal analyst at Collaborative Research.

By Webified, he means the move toward using browsers to access applications that are internal on a network.

The CacheFlow 5000 will ship in June. The base unit costs $39,950, but has no drives or memory, and requires add-on expansion trays. The price for a unit that can handle T-3 speeds is $79,950.

CacheFlow: (408) 220-2200

CacheFlow Internet accelerator

The new CacheFlow 5000 is a line of dedicated caching appliances that can scale to handle OC-12 (622M bit/sec). According to the company, the 5000 series:

- Is expandable.
- Can hold more than 40,000 connections simultaneously.
- Is a multiprocessor platform.
- Has a fault-tolerant disk subsystem.
- Is more than 99.999% reliable.

In-Site,
continued from page 37

advances in security by turning the protocol hodgepodge into a VPN-based extranet for the airline industry. And because routers and switches already widely support the IP Security standard, there will be an opportunity to institute security policies based on the idea of segregating traffic types.

"The VPNs give you a type of service field in the IP header to allow routing equipment to distinguish different types of traffic," McShea says. That would make it possible to set boundaries on the use of sensitive data. The next step will be testing a large amount of network equipment in a lab environment to see what works best, he says.

Getting some help

ARINC is getting consulting help on the new extranet design from Network-1 Security Solutions in Waltham, Mass. Although it's uncertain at this point whether Network-1's CyberWall firewall will be used in the project, ARINC awarded Network-1 a half-million-dollar contract to come up with the proposed VPN.

Although IP is now the target protocol for the ARINC net, nobody thinks the migration process is going to be easy. "We're going to have to include some of our legacy protocols through IP encapsulation, but we're trying to keep this small," McShea says.

Consolidation of the messaging types on the network is being done through use of IBM's MQSeries middleware. "This message queuing assures the message is delivered between the ATN and the airline industry corporate networks," McShea notes.

One catch

For ARINC, the one catch to designing an international network based on IP is that some international regulations governing commercial aviation require use of the Open Systems Interconnection protocol.

"According to the treaty called the Convention on International Civil Aviation, OSI rules," McShea says. When sending network traffic to government aviation authorities, including the Federal Aviation Administration, ARINC will have to comply with any demand that the data protocol be OSI-compliant.

"This affects significant parts of our business," McShea says. "But conversion between OSI and IP is a known science." ◪

'Net Insider . Scott Bradner

REAL TAXES FOR VIRTUAL PHONES?

It doesn't look like many of the charges on my current phone bill would survive a transition to Internet-based telephony. Unless the regulators notice their revenue seeping away and decide to get in the way, Internet phones look like they will be economically attractive. 'Net phones may be attractive enough that many users will tolerate poor quality, as they currently do with cellular phones, to save money.

Inspired by a column in the May issue of *Business Communications Review*, I looked at my phone bill to see what I am being charged for. My last Bell Atlantic bill for my fax machine phone line totaled about $33. (Well, it actually totaled just over $58 because I forgot to pay the previous bill.) Of the roughly $33 for the previous month's service, $6.94 was for the basic Bell Atlantic service, $1.26 was for various federal and state taxes, $17.94 for mandated fees of one type or another. There were also charges for touch-tone service, an unlisted number and actual phone calls.

Parenthetically, it seems quite strange that I have to pay extra for the number to be unlisted and for touch-tone dialing, both of which help Bell Atlantic reduce its costs.

The mandated fees included a $9.91 access line charge, $6.07 for a federal line charge, $1.70 for an AT&T carrier line charge and a universal connectivity charge.

How many of these charges would I expect to see on a bill from an Internet-based telephone company? Not many. No fee for being unlisted, no touch-tone fee, none of the mandated fees and few of the taxes. Even if one assumed the charge for the calls and the basic service would not change, the result might be less than $10 — one-third of the current bill. But I'd expect that the base charge would be less and that calls would cost less except when made to a non-Internet phone.

Removal of the line charges would mean a loss of revenue for telephone companies, which would break my heart. Removal of these charges would also mean less revenue for state and federal governments that might not like that. The governments' autonomic reaction will be to put real taxes on the virtual phones, but it is not clear if those taxes could look anything like the ones we now have. I can run dozens of virtual phones over my one physical cable-based Internet connection.

Will regulators try to put line charges on what I *could* do and charge for the potential connections, rather than what I actually do? How can they find out what I do? I can change the protocol I use so the packets do not look like telephone traffic. Might governments have to stop treating voice as a cash cow? That may be wishful thinking on my part.

Disclaimer: Wishful thinking is the main job of any educational institution, including Harvard, but the above wish is my own.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@harvard.edu.

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Technology Update

An Inside Look at the Technologies and Standards Shaping Your Network

Ask Dr. Intranet

By Steve Blass

Can you recommend an inexpensive tool for monitoring the traffic load on routers in our intranet? Via the Internet

There's a great GNU public-licensed tool, the Multi Router Traffic Grapher (MRTG), that runs on Unix and Windows NT systems. You can find it at www.mrtg.net. It uses a Perl script to gather SNMP data from routers and a C program to log the data and generate graphs, which it then embeds in Web pages for browser viewing.

To build MRTG on your system, you need a C compiler, Perl 5.004_4 or later and Boutell.Com's "gd" graphics library (at www.boutell.com/gd). (MRTG includes an SNMP implementation written in Perl; no additional SNMP software is needed.) Install Perl, build the gd library, then unpack MRTG and run the "configure" script followed by "make" to build the C components. Check that the path to your Perl installation is correct in the MRTG scripts and create the "mrtg. cfg" configuration file following the instructions at http://eestaff.ethz.ch/~oetiker/webtools/mrtg/config.html.

MRTG's "cfgmaker" tool generates the router-specific parts of your configuration file. To test MRTG, run "mrtg mrtg. cfg." You can incorporate it into your "crontab" (on Unix) or have the NT scheduler service run MRTG every five minutes to generate traffic graphs. For more information, go to www.nwfusion.com, DocFinder: 3134.

As a network architect Sprint Paranet in Houston, Blass understands the strain of developing and managing intranets. Send your problems to dr.intranet@paranet.com.

Protocols serve up VPN security

BY GREG MARCOTTE

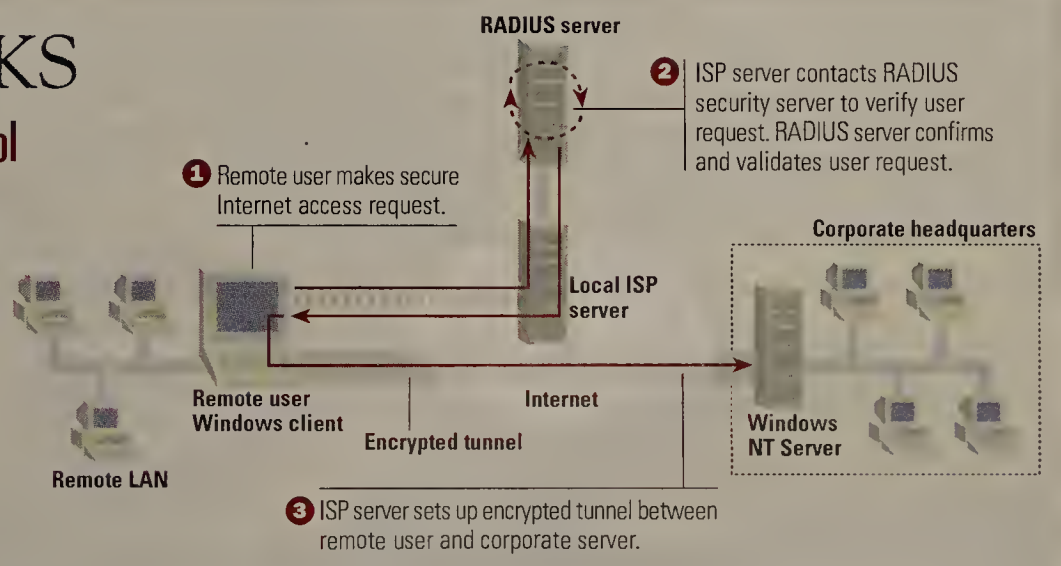
As the need to securely open corporate LANs to telecommuters and disparate corporate sites grows, virtual private networks (VPN) continue to meet the demand. VPNs — which establish private, secure sessions between two or more LANs or between remote users and a LAN — use the Internet or private IP networks to distribute data and enable corporations to eliminate additional, often expensive, dedicated lines or remote access servers.

Today, network executives must weigh two protocols that specify how VPNs should be built. The Point-to-Point Tunneling Protocol (PPTP) and IP Security (IPSec) protocol enable private sessions over the Internet and securely link remote users to corporate networks. The protocols also possess relative strengths and weaknesses in data security and ease of deployment. Network managers must determine which VPN protocol best suits the need of their organizations.

HOW IT WORKS

Point-to-Point Tunneling Protocol

Microsoft and U.S. Robotics designed PPTP from the start for dial-up VPNs. PPTP was meant to enhance remote access by letting users dial in to local ISPs and securely tunnel into their corporate networks. PPTP extends a direct PPP connection across an IP network. PPP, a protocol that defines point-to-point connections, is widely used to connect dial-up and broadband users to the Internet or private corporate networks.



PPTP vs. IPSec security

Spearheaded by Microsoft and US Robotics, PPTP was first intended for dial-up VPNs. The protocol was meant to augment remote access usage by letting users dial in to local ISPs and tunnel into their corporate networks. Unlike IPSec, PPTP was not intended to address LAN-to-LAN tunneling when it was first created.

PPTP extends PPP — a protocol that defines point-to-point connections across an IP network. PPP is widely used to connect dial-up and broadband users to the public Internet or private corporate networks. Because PPP functions at Layer 2, a PPTP connection that encapsulates PPP packets allows users to send packets other than IP, such as IPX or NetBEUI. IPSec, on the other hand, functions at Layer 3 and is only able to provide the tunneled transport of IP packets.

The encryption method commonly used in PPTP is defined at the PPP layer. Typically, the PPTP client is the Microsoft desktop, and the encryption protocol used is Microsoft Point-to-Point Encryption (MPPE). MPPE is based on the RSA RC4 standard and supports 40-bit or 128-bit encryption. Although this level of encryption is satisfactory for many applications, it is generally regarded as less secure than some of the encryption algorithms offered by IPSec, particularly 168-bit Triple-Data Encryption Standard (DES).

Protect and serve

Meanwhile, IPSec was built for secure tunneling over the Internet between protected LANs. It was meant for a connection with a remote office, another LAN or corporate supplier. For instance, a large automotive company could use an IPSec VPN to securely connect its suppliers and support purchases orders over the 'Net.

IPSec also supports connections between remote users and corporate networks. Similarly, Microsoft added LAN-to-LAN tunneling support for PPTP in its Routing and Remote Access Server for Windows NT Server 4.0.

When it comes to strong encryption and data integrity, IPSec is generally regarded as superior. The protocol combines key management with support for X.509 certificates, information integrity and content security. Furthermore, 168-bit Triple-DES encryption, the strongest form of encryption available in IPSec, is more secure than 128-bit RC4 encryption. IPSec also provides packet-by-packet encryption and authentication and prevents the "man-in-the-middle attack," in which data is intercepted by a third party, reconstructed and sent to the receiver.

PPTP, however, is vulnerable to such assaults, primarily because it authenticates sessions but not individual packets. Note, however, that mounting a successful man-in-the-middle attack against a PPTP connection would take considerable effort and know-how.

For many corporations, the ability to run PPTP from the Windows platform (it supports Windows NT, 95 and 98) can make deploying and maintaining a VPN seamless. For others, PPTP is perceived as less secure than IPSec.

It is important to bear in mind, however, if deploying a VPN for remote users, IPSec requires an organization to load specialized client software on each desktop. Client software deployment and maintenance are a weighty undertaking that must be considered. In terms of simplicity, PPTP is substantially easier to deploy.

Marcotte is co-founder and vice president of marketing for Altiga Networks, a vendor of VPN products located in Franklin, Mass. He can be reached at (508) 541-7300.

Gearhead — inside the network machine . Mark Gibbs

EUREKA! A WAY TO POST NOTES ON A WEB PAGE

Have you been looking for a way to foster a sense of community among a group of jaded users on an intranet? Or looking for a tool to foster Web-based group collaboration?

How about a way to comments on a Web page that irritated you? Something more satisfying than sending a message to a Webmaster who couldn't care less.

Gearhead just found out about a new Web service that solves all these problems and does so for free (there is a small amount of advertising that supports the company's operations). The service is called Third Voice from Third Voice, Inc., in Redwood City, Calif. (www.thirdvoice.com).

When Third Voice is installed, you can post and view notes attached to text on a Web page. What is interesting and — dare Gearhead go so far — profound about the system is that the Web site being commented on has no control over the comments.

Using the system requires downloading and installing a plug-in, which works only with Internet Explorer 4.0. (While Third Voice appears to install and work with Explorer 5.0, it

is very unstable and prone to failing — don't try this at home, Gearhead is a trained professional.)

In operation, Third Voice presents a panel on the left-hand side of the browser window that can be expanded to occupy a frame down the same side. The panel can be minimized to a small button when required, and all Third Voice browser support can be disabled if needed.

When Third Voice is running in your browser and there are notes on a page you have loaded, the notes are flagged by small icons (a colleague described them as "tiny fly specks") attached to the text with which they are associated (you can't attach notes to images).

When you click on a fly speck, up pops the associated note with a leader line to the icon to which it is attached. The Note window has controls to close it, snap to its icon, add a reply to the note, send the note by e-mail or go to the next threaded note.

Notes come in three flavors: Personal Notes, which are stored locally on your PC and can't be accessed by others; Group Notes, which are accessible by members of a password-protected group; and Public Notes, which Gearhead is pretty sure you can figure out. Notes can be up to 5,000 characters long, and there's a 30-day timeout on Group and Public notes after which they are archived.

When you view a Web page, the URL is checked to see if Third Voice has any notes stored on its servers that concern that address. If so, the notes' contents are returned along with the text to which they were attached.

The system's performance seems good, and the only drawback is that once a note is posted, you can't delete it. You have to wait for the note to "life out."

In an intranet context, the notes that you create will still be stored on the Third Voice Server, but because the URLs that you access internally will not exist in the outside world, your notes will effectively be private. Unfortunately, because there is no security, such as Secure Sockets Layer or encryption to protect the Notes' contents, your comments regarding your intranet content aren't secure in a way that would make a security-minded IT manager happy.

Gearhead really likes this service and thinks it could be very useful in marketing and research on the Web. Third Voice is the lucky recipient of three-and-a-half gear teeth out of five. When they run cross-platform, implement encryption and produce a version that can be implemented on customer's Web sites, we'll be ready to award them the other tooth and a half.

Web notes to gearhead@gibbs.com. Oh, and if you try Third Voice, join the Gibbs group; drop a note to tvg@gibbs.com.

Foo' Bar: Flexible frames

In recent weeks, the techies at The Motley Fool have shown you how to build a powerhouse Web server and determine what sort of content to stock it with. Now it's time to figure out how to create a navigational framework for all that content, so users can quickly find what they're looking for and you get a chance to highlight important material. Bring a willingness to learn about mapping tools and design software.

DocFinder: 3127

NOS migration

Have you moved from one network operating system to another? What issues were involved? A master's degree candidate is doing a survey on the topic, and we're curious about the answers. So fill out his form, then tell us about your experience in a forum on the topic. You might even save a fellow network pro some grief.

DocFinder: 3130

Career Doctor

The doctor is taking appointments. Career Doctor Shaun Kelly looks at the 12 most common job-hunting mistakes and how to avoid them.

DocFinder: 2729

Download of the week

RouterAssistant is a configuration management application for Cisco routers that can replace the typical Cisco command-line interface with a Java-based GUI that features logging of changes and the ability to restore any changes. It requires a Windows server (NT 4.0 or higher, Windows 95 or 98) and Internet Explorer 5.0 or higher or Netscape Navigator 5.0 or higher. Download a 10-day evaluation of RouterAssistant, or try out other management tools.

DocFinder: 3132

The video stars return

Last week, we discussed our experience as Webcast superstars and mentioned the problems folks here had getting the required Windows Media Player client to work. White Pine Software, which makes the CU-SeeMe software we used for our live interviews, says the problem might be our firewall: It wouldn't let us download the audio codec from Microsoft required to actually hear anything. If you're outside a firewall and want to see how streaming video and videoconferencing work together, come visit us.

DocFinder: 2931

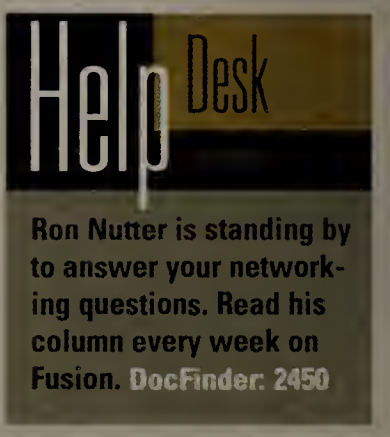
Take a message

If messaging is part of your purview, you need to take a look at our twice-weekly Network World Fusion Focus on Groupware and Messaging. This free e-mail newsletter, written by Joel Snyder, a senior partner at consulting firm Opus 1, covers everything from e-mail outsourcing to messaging security. You can check out the archive before you subscribe.

DocFinder: 3131

New: E-mail articles

Find an article you think might interest colleagues? Now you can send them a note about it from within the article. They'll get a summary and the URL (you can also scribble a note). If they don't have a Fusion account, when they click on the link, they'll get a temporary cookie to let them read the article.



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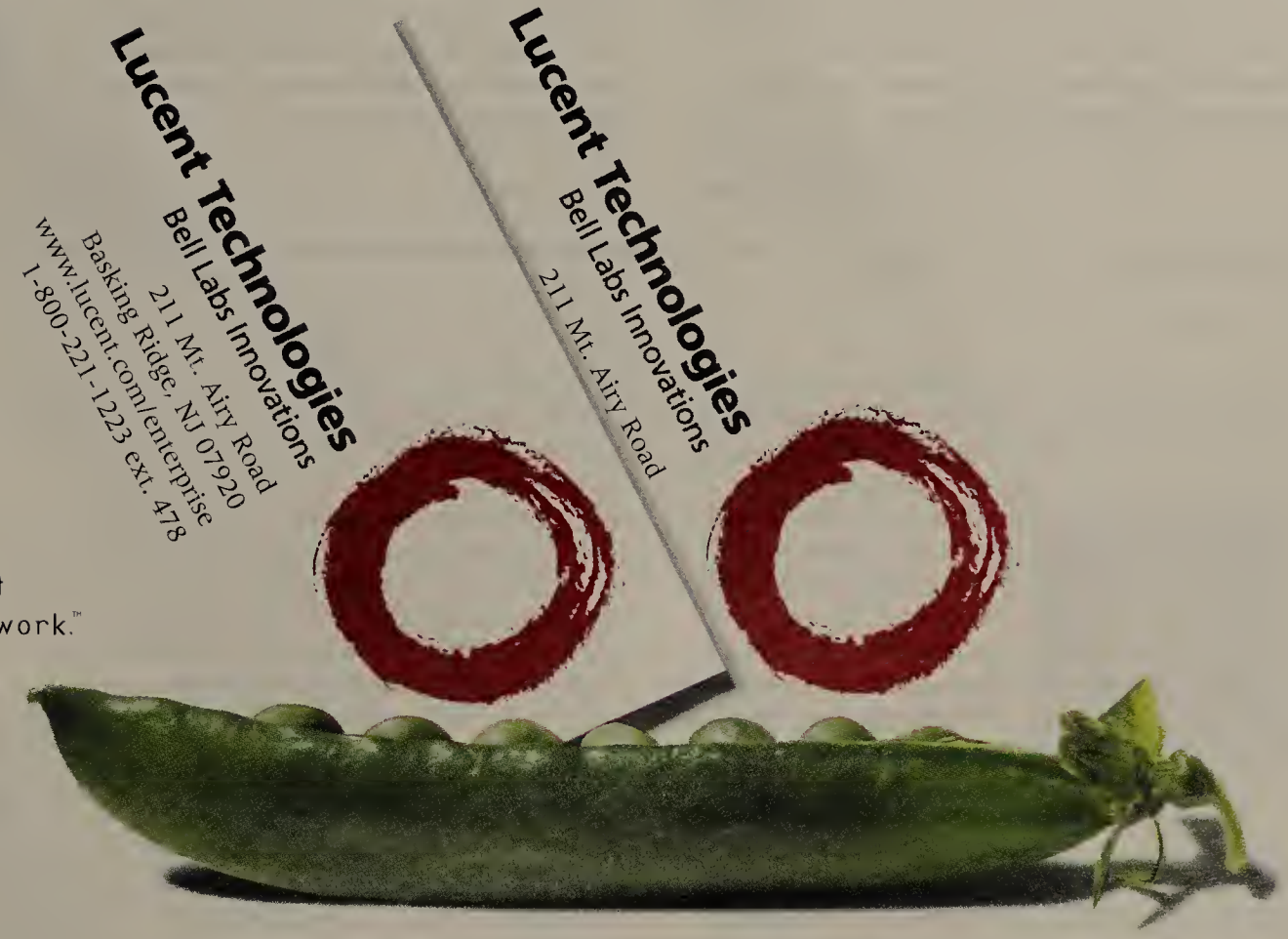

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Message Queue

Differing views on SwitchMetric, Cisco's lack of participation

Rather than pen my usual "Editorial Insights" column this week, I want to share an exchange of opinions I had with one insightful reader who reacted strongly to my recent column chiding Cisco for refusing to participate in the Network World/Tolly Group SwitchMetric test program ("Customers should press Cisco to support our SwitchMetric test," May 3, page 46). That column drew tremendous response from readers, who split on whether Cisco's rationale for not taking part is valid. We got thousands of page views for our forum on the topic. (You can see my original column and reader views by going to www.nwfusion.com, DocFinder: 3123.) Voice your opinion by taking part in the forum or e-mailing me.

— John Gallant
jgallant@nww.com

Rankings don't tell the whole story

How is the family minivan different from a Formula One vehicle, an IndyCar or a homemade go-cart? They all have four wheels, an internal combustion engine and a throttle, but they are never held to the same standard. All have different levels of performance and are designed for different tasks.

Your editorial laments the fact that Cisco refuses to participate in the Network World/Tolly Group SwitchMetric. You chide Cisco for a "lack of leadership." I say Cisco is demonstrating great leadership by showing that building networks involves more than winning the monthly speeds-and-feeds lab rankings of the pundit reviewer groups.

I'm not a Cisco customer. However, I am frustrated by the continuous reports from The Tolly Group, *Network World* and others that show only a very narrow view of what to consider when looking at Layer 2 and Layer 3 switch offerings.

It seems that all of the "advisory" groups and network trade press are willing and eager to package their findings in neat little charts and show rankings of the speeds-and-feeds horse race. It makes for easy reading. But in the final analysis, many of the charts and numbers about wire speeds and backplane throughput from these studies are insignificant compared to customer support, scalable and stable network management tools and the overall vision of the vendors' architectures and suitability to task.

It is clear that leadership sometimes means that you don't jump in the lake with everyone else. It could very well be that Cisco is sitting out this swim. I would urge *Network World* to press its contributors to go beyond presenting what is easy and discuss how vendor offerings perform in an end-to-end, application-driven dynamic environment.

Michael Hardy
Detroit

Gallant replies: *As I discussed in my editorial, I don't disagree with Cisco that other kinds of testing are necessary. In fact, we continue to work on those kinds of tests.*

However, the SwitchMetric is designed to give customers a standard benchmark, much like what exists in the computer and database industries. Using that, customers will have a more solid foundation on which to judge the higher-level functions. As you'll see from our first round of tests, there are dramatic differences at this basic price/performance level, and customers will find it easier to judge the value of those higher-level functions in light of the price/performance deltas (see www.nwfusion.com, DocFinder: 2837).

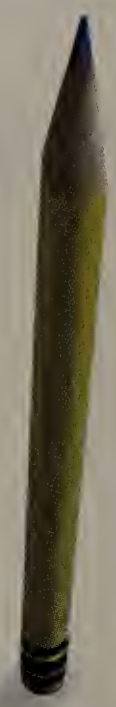
For example, if one switch costs 15% more per gigabit of throughput, is that acceptable because it offers slightly more management capability? It would have been difficult to make that assessment if you were trying to compare two switches whose manufacturers each claimed wire-speed performance.

Your car analogy is flawed because the vehicles you mentioned are not purchased by the same people and are not designed for the same functions. No father of twins buys a Formula One car to take them to church. Mario Andretti would not consider the Town & Country minivan for his next race (if he still races). But these switches are bought by the same people and are marketed for the same functions. Thus, that basic price/performance metric is warranted.

Many of the other things that go into buying a network device are not easily tested. For example, how would you test service and support? We do an annual survey of customers on this topic and you can make judgments based on that. But how do you test *that? How do you test company reliability and innovation? You can look at financials and research and development investment, as we do in our Network World 200 charts (April 26, page 43). We can test management tools offered by the vendors and, in fact, do that quite often.*

So you see, we're trying to provide a complete array of information.

Cisco should be willing to commit to this foundation benchmarking. All of the major computer and database vendors commit to that. It does not negate higher-level testing; in fact, it adds more value to that testing.

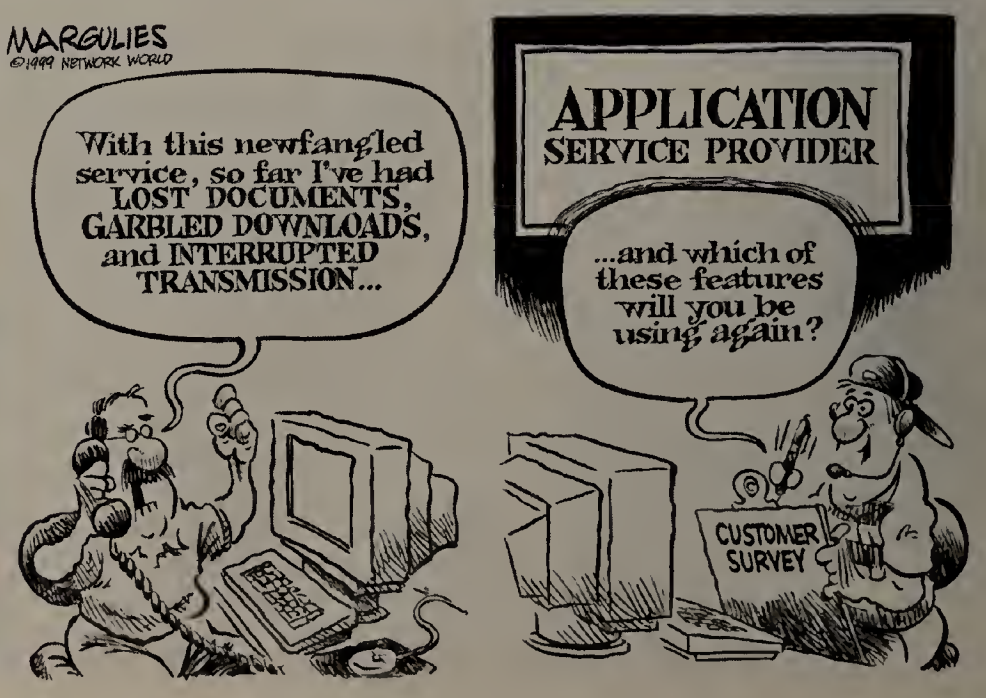


Hardy responds: What I fear may be happening is that vendors are engineering their products toward published tests like yours. I've talked at length with my colleagues, and they like your idea of standardized tests. They feel it's a good, elementary first step and quickly weeds out unfit products. However, once the initial weeding-out period has been completed, the total cost of ownership question involves a lot more than price per bit.

I think my car analogy is valid. However, I'll grant you my choice of vehicles is poor. Instead of comparing the family minivan to a race car, how about comparing trucks. If all I look at is gas mileage and horsepower, I could end up in very big trouble. If my "application" is pulling a boat, then I better have an oversized radiator and a transmission suitable for the task. I think the same issues apply to switches: How does one compare with the others in areas such as video to the desktop; plant floor, transactional and mainframe applications; enterprise resource planning and electronic commerce.

I must not go on without thanking you for your leadership in this area. If you and your colleagues could somehow couple the standardized testing with some sort of standardized applications testing, I think you will develop a standard no vendor should ignore.

Send letters to nwnews@nww.com or John Gallant, editorial director, Network World, 161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification.



Intelligent Networking . Thomas Stenson

LAYING THE FOUNDATION FOR POLICY-BASED NETWORKING

Policy-based networking has been around at least since Cabletron pushed the idea a few years ago in conjunction with its SecureFast switching architecture. In the past year, nearly every leading network equipment vendor has announced a policy-based networking initiative. Companies didn't buy it from Cabletron then; will they buy it now?

The answer is yes. The primary reason: the existence of a killer application — voice over IP.

Voice-over-IP gateways and Ethernet-based telephone systems let us move voice calls directly onto our packet-based backbone data networks. The caveat is that we will need robust, manageable, end-to-end quality of service (QoS).

Enter policy-based networking. The goal of policy networking is to allow you to define QoS and security policies in relatively simple terms at a policy administration station. These policies are translated into configuration instructions, which are downloaded to network devices via a protocol such as Common Open Policy Services (COPS).

Most vendors are pushing the idea of storing configuration information, along with user, device and application information, in a Lightweight Directory Access Protocol (LDAP)-compliant directory system so multiple network applications can share and make decisions based on the information. Domain Name System/Dynamic Host Configuration Protocol (DNS/DHCP) systems will dynamically update the directory with IP address-to-device association information, which is used in policy enforcement. Ultimately, the network will dynamically learn of changes from the directory and will reconfigure itself to ensure that QoS and security policies are appropriately applied.

As vendors resolve issues of scalability, interoperability and ease of use, policy networking will be adopted because it will be the only reasonable way to manage a converged voice/data/video network.

So what should you do now? Start by learning about fundamental concepts and technologies, including QoS, COPS and LDAP, and begin laying a foundation for policy networking.

Think about where you will need QoS and security capabilities in your network, and understand the policy networking initiatives of your primary vendors.

Take a close look at your DNS/DHCP infrastructure and the products available on the market. DNS/DHCP is a fundamental building block of policy-based networking; make sure you implement a robust system that positions you for the future.

Finally, get an understanding of directories and begin to plan a next-generation directory structure for your corporation. Study Microsoft's Active Directory initiative because it will affect you. The directory will be the key information repository for the network and will play a critical role in enabling peer-to-peer communications and advanced cooperative applications. It may even help us realize the Holy Grail of single sign-on.

Stenson is president of M5 Systems, a Boston consultancy, and a former vice president of network architecture at a major financial institution. He can be reached at tstenson@m5systems.com.

On Security . Winn Schwartau

ANTIVIRUS COMPANIES SHOULD STAY ON TOP OF THEIR PRODUCTS

The other day I was helping a friend get rid of an e-mail virus that had infected his computer when he opened a self-executing attachment. Thankfully, it was a fairly benign virus but annoying nonetheless. To remove it, I suggested that he get a legitimate, current and paid-for copy of some antivirus software.

Despite my best arguments, my friend was uncomfortable putting his credit card on the Internet, so I used mine. I went to Network Associates' Web site (www.nai.com), where the company's marketing literature and Web propaganda say Network Associates' products capture every virus out there — nearly 30,000 of them. We chose the single-user version of VirusScan, paid for it and downloaded it, all of which went smoothly. The installation was seamless and I proceeded to run a virus check.

Imagine my surprise when VirusScan gave the infected computer a clean bill of health. No viruses found anywhere. Huh? Something was wrong here, unless the virus was so new that no one else had caught it yet, which I seriously doubted. What to do?

I ran the software again, just in case, and the same result came back: clean. This time, however, a screen appeared, asking me if I wanted to make a boot disk in case of emergency. Then I noticed the software's copyright date was 1998. Could this be for real?

I poked around a bit and found the following information: Signature file version V4001, Oct. 28, 1998. 20,951 viruses. Huh? Could Network Associates be so derelict as to sell ancient antivirus software to an unsuspecting public?

To find out, I dialed Network Associates' toll-free number. After hacking away at the company's voice mail system and at long last reaching a live human being, I was informed there was no customer service available at that number. I had to make a long-distance toll call. Another black mark for Network Associates. Why should customers have to pay for a long-distance call because the new product they just bought doesn't work correctly?

After I was on hold for about 15 minutes, a customer service representative came on the line. I described the problem: I have a virus and I have new Network Associates software that says I don't have a virus. What's up with that? And what about this signature file that's almost seven months old?

"Well, that's normal," the customer service representative said. I was floored.

"It's normal for Network Associates to sell antivirus software that's old?" I asked.

"Yup, normal. You need to update your signature file."

"Duh!" I said, echoing my 8-year-old son's favorite phrase. But I wasn't through with the representative. "You're telling me that you sell outdated software to unsuspecting customers who don't know any better? How can a Network Associates user know he's getting the latest and greatest?"

"Uh . . . he'd have to check the date," the customer service representative stammered lamely. The tone of his voice told all: He was embarrassed for himself and his company.

The problem is simple: Network Associates has been selling outdated software for months to customers who are generally less than technically astute — casual users who are looking for virus protection because we security experts have been drumming it into their heads that they need to. These users installed the antivirus software and got a clean bill of health, as I did, when clearly the product did not meet its advertised claims.

Network Associates is, at minimum, guilty of providing its customers with a false sense of security, perhaps allowing their computers to be damaged by the very viruses the company promised to detect and eradicate. At worst, Network Associates is potentially guilty of false advertising and owes its last two to three million customers a full refund.

Listen up, Network Associates: Get with the program and straighten out this abomination you provide. It would be easy and inexpensive and more importantly, it's the right thing to do.

Schwartau is chief operating officer at The Security Experts, an information security consulting firm in Seminole, Fla., and president of InfoWar.com. He can be reached at winn@securityexperts.com or winn@infowar.com.

*Estimated retail price for model 6862-29U (CPU) and 654102N (monitor). Actual prices may vary. MHz denotes microprocessor internal clock speed; other factors may affect application performance. GB = 1 billion bytes for hard drive capacity. All PCs in this ad ship with an operating system. IBM product names are registered trademarks of International Business Machines Corporation. Intel, the Intel Inside logo and Pentium are registered trademarks of Intel Corporation.

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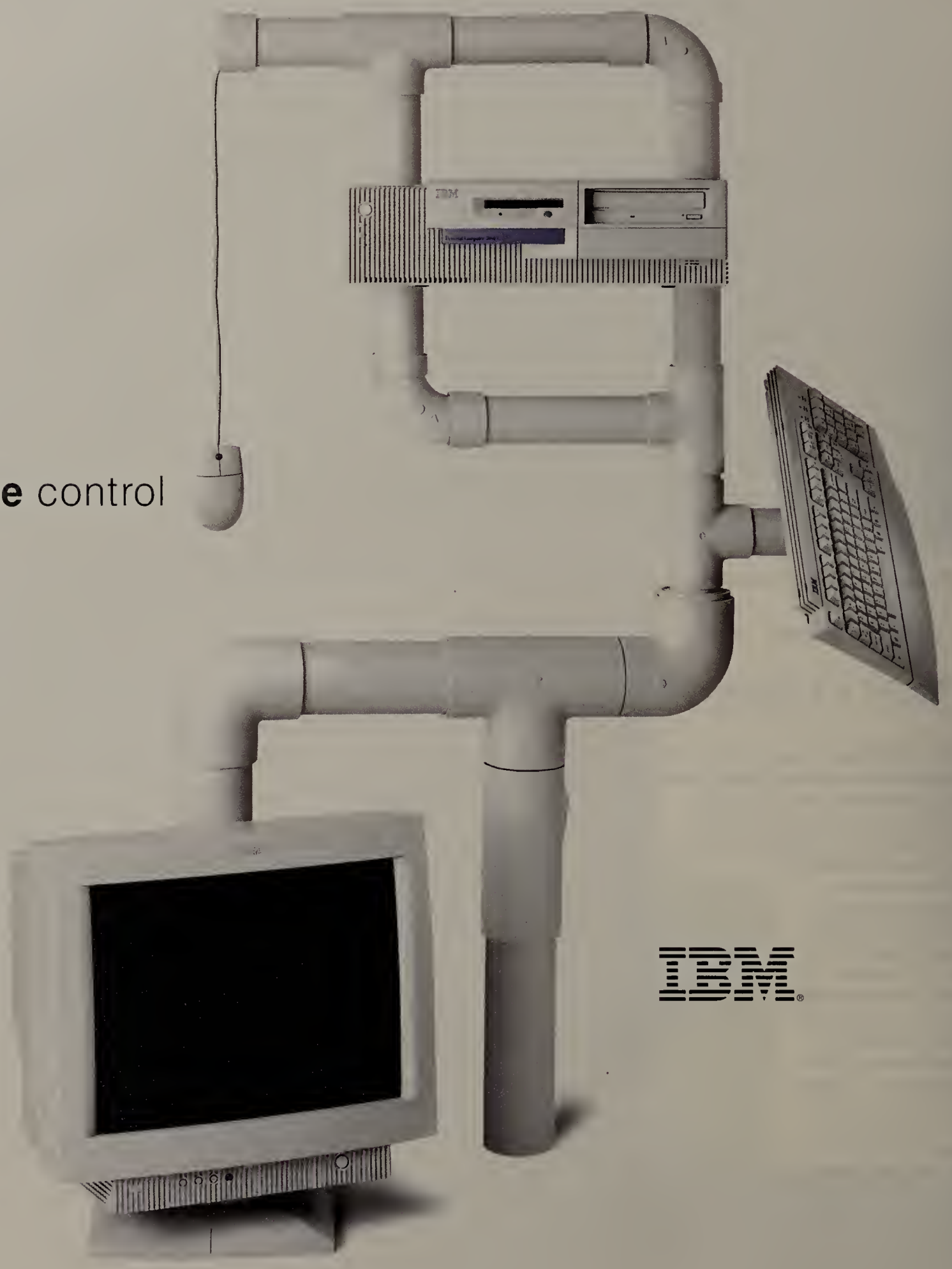

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e-business tools

TAKE MY APPS — PLEASE

Continued from page 1

Newer, smaller companies without massive investments in legacy IT systems represent an exception to the rule. They are increasingly willing to outsource applications, according to industry experts, who expect this willingness will soon spread to established organizations of all sizes.

According to International Data Corp. (IDC) in Framingham, Mass., spending on high-end outsourced applications, such as ERP and e-commerce, will grow from an estimated $150.4 million this year to $2 billion by 2003, a compound annual growth rate of 91%.

The Gartner Group in Stamford, Conn., predicts e-mail outsourcing alone will blossom from its current $400 million per year to $1.2 billion annually by 2001, presuming no significant advancements in service offerings will be made. If, however, service providers can overcome the technical reservations of potential customers — security and advanced e-mail functionality are mentioned often — that market could rise as high as $2.56 billion, Gartner says.

Here's another sign of momentum: Earlier this month, 25 companies, including Cisco, UUNET, Citrix Systems and Exodus Communications, announced the formation of a consortium that will attempt to create standards for the ASP industry. And some vendors are throwing real money at the ASP idea. In a deal with Qwest, Hewlett-Packard is investing $500 million to outfit Qwest "CyberCenters" throughout the country with the hardware, software and services necessary to offer application services, the first of which will be SAP's R/3.

All this activity comes despite previous conspicuous application outsourcing failures, such as AT&T's effort to peddle Lotus Notes and Novell NetWare services in the early '90s, and an MCI attempt to do the same with Microsoft BackOffice. However, experts say the maturation of the Internet coupled with ever-expanding bandwidth and advanced security technology gives today's outsourcers the ability to succeed where their predecessors failed.

Boom times ahead for e-mail outsourcers

Worldwide market projections:

	1999	2000	2001
Presuming current services	$574M	$775M	$1.2B
Presuming services improve	$700M	$1.2B	$2.5B

SOURCE THE GARTNER GROUP, STAMFORD, CONN

The need for maximized speed to market will drive e-commerce application customers into the arms of ASPs, according to Meredith McCarty, senior analyst with IDC's Internet Services research program.

"There is a great pressure on organizations to deploy e-commerce applications rapidly," McCarty says. "Many organizations do not have this talent in-house and are more likely to outsource this function" as opposed to more established IT "sacred cows."

Quote.com, an online provider of real-time financial information since 1993, fits the profile of today's typical ASP customer. Last year, the Mountain View, Calif., company realized it was having trouble properly handling the 400 daily e-mails it was receiving from visitors to its Web site.

Quote.com sought help from eGain Corp. in Sunnyvale, Calif., whose Email Management System automatically responds to incoming Web site e-mail and/or routes it to the appropriate employee within an organization. Companies have the option of buying the product or letting eGain host their implementation.

"We looked at the option of implementing Email Management System ourselves — the benefits vs. the costs — and it made a lot more sense to me at that stage to outsource," says Kaj Pedersen, vice president of engineering at Quote.com.

Handling the application in-house would have cost Quote.com about $80,000 in upfront costs, of which $50,000 would have gone to a full-time administrator, Pedersen says. The $50,000 the company wound up paying eGain was, therefore, a bargain. But more important was keeping a time-consuming customer service task off the plate of Quote.com's 44-member IT department.

"We still need to own the relationship with the customer, but we don't have the [organizational] bandwidth to develop that kind of sophisticated [e-mail] technology," Pedersen says. Quote.com is also exploring the possibility of outsourcing its customer registration and billing systems.

ERP — a prime candidate

The outsourcing of ERP applications, although a small piece of the overall ERP market today, promises to be fertile ground for ASPs in coming years, industry experts say.

Dinwiddie Construction in San Francisco, whose most recent high-profile project was the J. Paul Getty Museum in Los Angeles, is one large company that has already taken the plunge. The company has been outsourcing J.D. Edwards ERP applications for several years through World Technology Services in Seattle. Dinwiddie, a $500-million business with 650 employees, uses J.D. Edwards' general ledger and cost-tracking applications.

"On the dollars-and-cents side, it seemed to us that there were some economies of scale and economic benefits of going to the outsourcing mode," says David Miller, Dinwiddie's controller. "The real hurdle for us was more of an emotional one in that we would be giving up control over a very, very, very important business application."

Miller estimates the outsourced applications have cost his company two-thirds the price of deploying and administering the same systems in-house. However, he, too, sees additional benefits to outsourcing that do not necessarily show up on the bottom line.

"There were benefits to having our MIS people focus on our project-oriented needs as opposed to general financial payroll-type applications," he says. "It's hard to put a price tag on outsourcing those headaches to someone else."

That's a sentiment shared by Alan Fraser, CEO of Virtual Networks, a maker of voice and data communications platforms in Sunnyvale, Calif.

"We're trying to be the ultimate virtual company," Fraser says of his 120-employee operation. Part of that strategy involves outsourcing PeopleSoft ERP applications through Corio, an ASP headquartered in Redwood City, Calif.

Virtual Networks considered several options before outsourcing with Corio, according to Victor Ahluwalia, Virtual's director of finance. Buying and deploying the PeopleSoft applications in-house would have cost roughly $1 million and taken one to two years to fully implement, he says. A less-expensive alternative from Great Plains Software in Fargo, N.D., was weighed but ultimately rejected, Ahluwalia adds, primarily out of concern that it would not scale long-term to meet the growing company's needs.

"At the end of all that, we came to the conclusion that the best solution for us would be to outsource this if we wanted to be ready for the long-term," Ahluwalia says. Virtual sees outsourcing as a way to provide a first-rate, highly scalable set of applications without having to hire new staff or worry about deploying future upgrades.

Drawbacks and hesitations

Skeptics argue that outsourcing can cost a company more in the long run than swallowing hefty initial deployment costs. This may be true, Virtual Networks executives say, but it's not reason enough to tip the scales in favor of deploying the applications in-house.

However, there are other potential drawbacks in any outsourcing arrangement, Fraser acknowledges.

"The obvious one is that you don't have direct control over what's going on and you do vie [with other customers] for resources within the outsourcing

Should you take the plunge?

Experts say your organization should consider application outsourcing if . . .

- Handling enterprise applications such as e-mail and ERP in-house keeps IT staff from other important projects.
- Saving on upfront hardware and software expenses is a priority.
- It's important that your costs be highly predictable.
- Future scalability requirements are likely to be great or uncertain.
- Software pilot programs and upgrade deployments are unacceptably burdensome.

Outsourcing may not be right for you if . . .

- Maintaining hands-on control over application deployment and maintenance is important.
- Large volumes of business data are locked in legacy software systems, such as ERP.
- Appropriate IT expertise and staffing levels already exist to handle the applications in-house.
- Security requirements or government regulations preclude storing sensitive data outside the company firewall.
- The ability to customize a particular application to changing needs is considered critical.

"Unless you treat this like a relationship that you must build and foster, you're going to end up having problems, just like you would with any supplier."

Alan Fraser, CEO, Vertical Networks

company," he says. "Unless you treat this like a relationship that you must build and foster, you're going to end up having problems, just like you would with any supplier."

While some who shun outsourcing complain that it does not give a company the option of customizing their applications, Fraser sees this alleged drawback as a virtue.

"If we did the applications in-house, we might be more likely to start customizing, which I absolutely do not want people to do," he says. "Having spent a fair bit of my career in large corporations, I know the kinds of headaches you get and the lack of flexibility you end up with when you start going down the customized route."

These testimonials to the virtues of application outsourcing do not sway everyone, of course.

"It's nothing that we would ever do," says George Taylor, a network administrator at Black Hills Health Care Network in Spearfish, S.D., which has 800 employees spread over nine locations. "The main reason is that we have enough expertise in-house to run the system right, so why pay someone else to do it?"

Security concerns, however, also contribute to Taylor's reticence.

"I hate to just come out and say I wouldn't trust [an outsourcer], but there is very much a concern about confidentiality because this is health care," he says. "We can't take the chance of someone seeing a patient record."

As president of Software.com, Valdur Koha has a stake in seeing the outsourcing industry overcome such objections. His Santa Barbara, Calif., company makes highly scalable e-mail servers used by ISPs.

"One of the big hurdles, of course, is the question of whether I want mission-critical data to be outside my firewall," Koha says. "As people get more comfortable with that and see that it's safe to do, people will opt to outsource." Confidence levels are rising, he says, with the emergence of name-brand ASP players armed with legally binding service-level and security agreements. Stronger encryption technology, a must for secure outsourcing, is also playing a big role.

Weighing the options

His own company will soon be among those jumping on the bandwagon, Koha says, as Software.com intends to sign on with an e-mail outsourcer he declined to name.

"We certainly are very knowledgeable when it comes to e-mail," he says. "We can run our e-mail environment, but what we cannot provide at a reasonable cost is 24-7 technical support. If a server crashes on a Saturday, I've got to page somebody to come in to reboot."

Even service providers have to face the question of whether to build their own application infrastructures or resell the services of a larger outsourcer.

"We've gone through that decision-making process twice now [for e-mail and fax] within the last year," says Jon Crumrine, product manager for application services at Intermedia Business Internet, a network services provider in Beltsville, Md.

The e-mail decision came down to a choice between buying and deploying InterMail Server from Software.com or reselling the service through Critical Path, an e-mail outsourcer based in San Francisco.

"Obviously, there are merits to both," Crumrine says. "We decided that strategically it would be better to go ahead and build our own. . . . If you decide to outsource it, you lose an element of control."

Many of those who do outsource argue that the control issue is overrated. Remote management tools offered by

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The CONTEXT Corp.

Understanding TCP/IP:

Implementing the Protocols of the Internet

PROGRAM OVERVIEW

TCP/IP has become the standard you must be well versed in if you work in an Internet- or intranet-centric environment. An in-depth and clear comprehension of TCP/IP is essential for network administrators, analysts and PC support staff who need to understand the practical applications of this ubiquitous protocol — not just the theory behind it.

TECHNICAL HOT POINTS

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- Understand how IP-based routing works
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outsourcers give them the most important control, they say, which is the ability to administer end-user accounts.

Rick Lazer, network engineer in charge of messaging at Skadden, Arps, a New York law firm, sees just that balance in an e-mail content filtering and virus scanning service called MailZone from AllegroNet of Dayton, Ohio. Skadden, Arps also outsources Internet e-mail connectivity to AllegroNet.

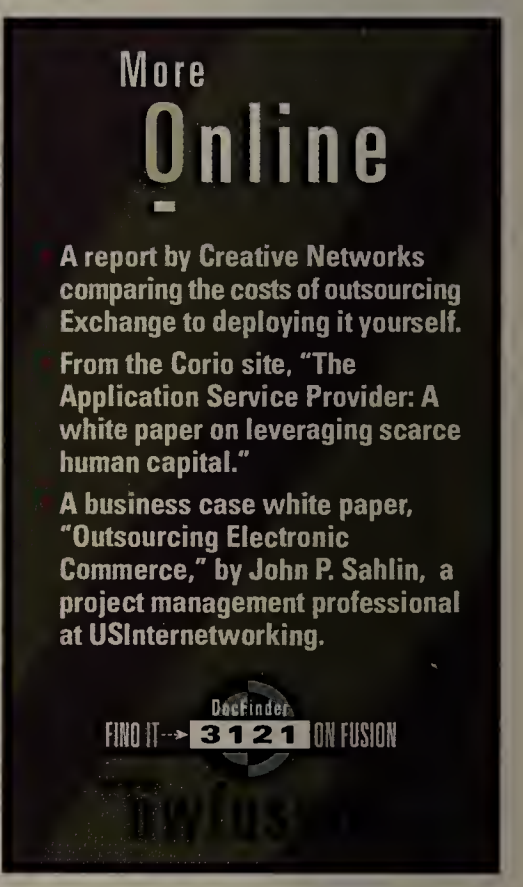
"In this case, we feel the service offers great ease of management and great flexibility with little administration involved," Lazer says. "If we wanted to, we could bring that in-house and maintain the servers ourselves and deal with the updates of the virus signatures, but it's a lot easier to outsource."

MailZone provides rules-based e-mail filtering designed to stem the flow of frivolous .avi files and executables that can bring a corporate messaging environment to its knees, particularly around the holidays. The service is blocking 500M bytes worth of nonbusiness related e-mail attachments every week, according to Lazer.

"All I need on my side is a browser to actually manage MailZone when I do need to manage it, such as releasing messages that shouldn't have been blocked or adding users who need to be excluded from the block," Lazer says.

E-mail outsourcers say they've had more success attracting customers to supplemental services such as MailZone than they have in convincing companies to outsource complete messaging systems. AllegroNet reports the MailZone customer base grew from 200 to more than 800 companies since the beginning of this year.

Outsourcing has clearly captured the fancy of newer companies, but will their bigger and more-established brethren really be following suit any time soon? A lot of IT industry heavyweights are betting they will, as brand names such as Cisco, BellSouth and the Sun/Netscape alliance have recently launched their own outsourcing initiatives.



"To my surprise, we know about a couple of very large customers who are seriously looking at outsourcing" their e-mail, says Software.com's Koha. "One has 60,000 employees — a big international corporation — and the other one has 120,000 or 130,000 employees."

Virtual Networks' Fraser believes it's only a matter of time before such companies take the plunge. "It's going to be imperative for them to do so, or they won't be able to compete with the new companies that are really agile and flexible."

McNamara is a senior editor with Network World, *covering enterprise applications. He also writes the magazine's "'Net Buzz" column. He can be reached at pmcnamara@nww.com.*

BY JAMES GASKIN,
NETWORK WORLD TEST ALLIANCE

Review

INVENTORY YOU CAN COUNT ON

Seagate's WinLAND stands out for taking stock of local and remote network clients.

Honest network executives will admit they don't know exactly how many PCs are in their buildings, much less how each is configured. Financial officers don't like hearing this, but it's true.

Inventory and asset management programs aim to eliminate the unknown. They include huge software databases, so the best of these programs can identify the most obscure applications. The programs provide more hardware details than many of us have the patience to ponder — and that includes information about remote users' software and hardware, which some packages can query through a Web interface.

We tested five dedicated inventory and asset management programs. A beta version of Seagate Software's WinLAND 4.5 topped the field, earning our Blue Ribbon Award. Seagate's pending merger with Veritas Software hasn't put a damper on WinLAND development, which stood out for its unbeatable selection of reports and options for exporting those reports.

Close behind WinLAND in our tests was Tally Systems' NetCensus 2.94. The product provides excellent inventory analysis but lacks the export options of WinLAND. Additionally, NetCensus employs an unorthodox inventory approach that requires you to create and maintain your own collection software.

Bundled with a Y2K testing tool, Attest Systems' Gasp Audit 5.0 delivers strong hardware and software recognition and plenty of export options. However, like NetCensus, Gasp has a unique setup that makes it more difficult to learn than the average product.

The final two programs we examined, BindView Development's NETinventory 6.0 and Computer Associates' AimIT 3.0 Workgroup Edition, fell behind the leaders in hardware and software inventory and reporting features. On the plus side, NETinventory's documentation is outstanding, and AimIT includes tools for automating software upgrades and lets you query remote PCs through a Web interface. WinLAND is the only other product we tested that allows such Web browser-based remote queries.

Operating system support is consistent among the five products we reviewed. All support Windows NT and NetWare; none support OS/2 Warp or VINES.

All the products tested support Windows, DOS, OS/2 and remote stand-alone clients. While support for Unix, Linux and Macintosh clients is more important for many organizations than support for OS/2 clients, not one of the products we tested supports Unix or Linux, and NetCensus and NETinventory lack support for Macintosh clients. In addition, the absence of a ubiquitous corporate directory service means these products must build yet another organizational structure rather than working with Novell Directory Services (NDS) or Lightweight Directory Access Protocol.

Winning combination

We tested a near-final beta version of Seagate's WinLAND 4.5, which is scheduled to ship at the end of June, and were impressed with the polish, ease of use and detail it provides. WinLAND's software inventory capabilities are unmatched. In our tests, the program correctly tagged nearly every application. Its hardware inventory was also among the best we tested.

Product: WinLAND 4.5

Vendor: Seagate Software

In a field of five inventory and asset management programs, WinLAND conducted the most comprehensive software inventory and offered the largest selection of reporting options.

The main console shows a tree display on the left and multiple tabbed pages on the right. Criteria branches make it easy to group nodes based on any characteristic, such as total memory. Nested sub-branches let you control the display as you wish, such as by NT swap file size. Predefined templates quickly provide information to console screen or paper. For example, WinLAND can identify all PCs that are likely to have trouble running Windows NT because of low memory or disk space.

Logon script entries trigger a DOS-based collection agent on each workstation. A RUN statement in the WIN.ini file collects additional Windows-specific information. Some machines required the user to press Enter to clear the DOS box; others didn't.

By default WinLAND checks for new client information every 5 seconds. We found that frequency unnecessarily high. By changing the default check to 10-minute intervals, we dropped WinLAND's network traffic load to low levels without sacrificing quality.

WinLAND's range of standard reports is comprehensive, and Seagate includes Crystal Reports for generating custom reports. You can schedule reports easily using a graphical calendar, and report export options are plentiful (see graphic, page 52).

From the beginning, installation was smooth using the default settings. The console requires a Windows 95, 98 or NT platform, though the database server can run on a Windows or NetWare 3.x, 4.x or 5.0 server. The default database server is the Sybase SQL Anywhere Database and Open Database Connectivity driver; Seagate plans to add support for Microsoft SQL Server and Oracle with the shipping version or soon thereafter. WinLAND's collection agents reside on a NetWare or NT logon server in a shared directory; you can control users' read and write access to this directory.

WinLAND's extensive electronic documentation is almost unnecessary, thanks to the program's well-designed interface.

Worth the extra time

Like WinLAND, Tally Systems' NetCensus 2.94 delivers excellent inventory analysis, but we found you have to invest some time getting used to the program's unique design before you can take advantage of its findings.

Unlike the other products we reviewed, NetCensus requires managers to create "collector" software that incorporates user contact information, such as name, location and telephone number. If you change contact information or add custom products to the collectors, you must make another set of collectors. This process isn't difficult, but it is unusual.

ScoreCard	Client support 20%	Hardware inventory 20%	Software inventory 20%	Reporting 10%	Interoperability 10%	Job scheduling 5%	Standards support 5%	Installation 5%	Documentation 5%	Total score
WinLAND 4.5	8 x .20 = 1.60	8 x .20 = 1.60	9 x .20 = 1.80	9 x .10 = 0.90	7 x .10 = 0.70	8 x .05 = 0.40	7 x .05 = 0.35	8 x .05 = 0.40	8 x .05 = 0.40	8.15
NetCensus 2.94	8 x .20 = 1.60	8 x .20 = 1.60	8 x .20 = 1.60	8 x .10 = 0.80	7 x .10 = 0.70	7 x .05 = 0.35	7 x .05 = 0.35	7 x .05 = 0.35	8 x .05 = 0.40	7.75
Gasp Audit 5.0	8 x .20 = 1.60	8 x .20 = 1.60	8 x .20 = 1.60	9 x .10 = 0.90	6 x .10 = 0.60	6 x .05 = 0.30	6 x .05 = 0.30	6 x .05 = 0.30	6 x .05 = 0.30	7.50
NETinventory 6.0	7 x .20 = 1.40	7 x .20 = 1.40	7 x .20 = 1.40	7 x .10 = 0.70	7 x .10 = 0.70	6 x .05 = 0.30	8 x .05 = 0.40	6 x .05 = 0.30	9 x .05 = 0.45	7.05
AimIT 3.0 Workgroup Edition	8 x .20 = 1.60	7 x .20 = 1.40	6 x .20 = 1.20	6 x .10 = 0.60	8 x .10 = 0.80	7 x .05 = 0.35	8 x .05 = 0.40	6 x .05 = 0.30	7 x .05 = 0.35	7.00

Individual category scores are based on a scale of 1 to 10. **Percentages** are the weight given each category in determining the **total score.**

Net Results

WinLAND 4.5
Seagate Software
(800) 327-2232
www.seagatesoftware.com/winland
$1,000 for 50 nodes; $6,495 for 500 nodes; $11,875 for 1,000 nodes

Pros
- ▲ Extensive reporting features
- ▲ Excellent report export options
- ▲ Helpful documentation

Con
- ▼ Default settings cause heavy network traffic

NetCensus 2.94
Tally Systems
(603) 643-1300
www.tallysystems.com/cenergy/products/ntc/index.html
$10 to $16 per node, based on volume

Pros
- ▲ Excellent inventory analysis
- ▲ Helpful documentation

Cons
- ▼ Users must create collector software
- ▼ Requires separate step to load client information into database
- ▼ Limited report export options

Gasp Audit 5.0
Attest Systems
(800) 471-4277
www.gasp.com
$14 to $48 per node, based on volume

Pros
- ▲ Includes Y2K testing tools
- ▲ Useful reports
- ▲ Strong hardware and software recognition
- ▲ Excellent report export options

Cons
- ▼ Confusing to start
- ▼ Faulty NetWare logon script instructions

NETinventory 6.0
BindView Development
(800) 749-8439
www.bindview.com/products/netinv/data.html
$26 per node, plus $1,995 for required EMS Console; $18 per node for NETrc remote control module

Pros
- ▲ Strong detail, especially on NetWare and NDS inventories
- ▲ Handy report templates

Cons
- ▼ Can't use NetWare 5 for server platform
- ▼ Transferred client Dynamic Link Libraries files improperly

AimIT 3.0 Workgroup Edition
Computer Associates
(800) 243-9462
www.cai.com/products/fdb/aimit_fdb_wg.htm
$995

Pro
- ▲ Strong hardware details

Cons
- ▼ Incomplete installation instructions
- ▼ Mislabeled operating systems
- ▼ Unaware of some standard programs
- ▼ Limited report export options

NetCensus stores the collectors on a shared drive, but you can run them from a local drive. Typically, logon scripts trigger the collectors. Alternatively, you can run the collectors directly to initiate an inventory. We found network load was average.

As a result of this unusual collection technique, census information from audited computers isn't automatically stored in the Sybase inventory database running on the administration workstation. NetCensus requires users to first load the collected data by clicking on a forklift icon.

Having done so, we were amazed at the detail NetCensus discovered. For example, the software logged the ID and serial numbers for our Windows 98 operating system and the Microsoft Office Service Packs. NetCensus even found the ShockWave plug-in in Netscape Navigator 4 and identified it with the proper version number.

Users run reports manually from a list of report configurations. In general, the reports aren't beautiful, but they're full of information. On the downside, NetCensus limits exports to ASCII and dBase Format.

Installing NetCensus is fairly smooth, as long as you follow the instructions. Fortunately, there's no lack of documentation with NetCensus.

Tricky start yields helpful results

For a slightly different twist, Attest Systems emphasizes its built-in Year 2000 testing tool that ships with Gasp Audit 5.0, reminding managers that you can't verify what you can't find. Indeed, the testing tool is a bonus, but a confusing start and some faulty NetWare logon script instructions detract from Gasp's appeal.

We struggled with Gasp at first as we learned to decipher its two-paned console interface, which shows a tree display on the left and multilevel tabs on the right. We had to load the program's Enhanced Hardware Module to obtain hardware details and fix the mangled syntax for the supplied NetWare logon script to launch the audit program. Then we realized we needed to configure the audit files with the logon server's name and other required information.

Once underway, Gasp completed the first audit we launched fairly quickly — roughly 30 seconds — and its added traffic load was light. The second time we tried to run an audit, nothing happened. We discovered the default configuration allows no other audits on a client machine within the next 90 days. We find that interval unacceptably long, but it's easy to change the schedule as soon as you find the configuration screen (which is located under File Preferences, oddly).

When we integrated the audits into Gasp Report, we were impressed by the amount of hardware and software information Gasp captured. Admittedly, some material is overkill, such as the list of every video resolution setting on each PC's video board. Audit information includes a dozen user-defined fields for those managers who want to add more details manually.

With a 17,000-program software identification database, Gasp correctly identified software missed by most other packages, including WordPerfect 5.2 and an old shareware version of Eudora.

Crystal Reports drives the reporting; and Attest supplies a generous selection of report export options.

We had no trouble installing Gasp or the Inprise (formerly Borland) Database Engine on the NT Workstation 4 client we used for our console. Documentation consists of a small "Getting Started" brochure and "Getting Started" Portable Definition Format (PDF) file. Help screens in the program are your only other place to turn, unless you contact technical support.

Wanted: NetWare 5 support

While BindView trumpets NetWare 5 support, it isn't necessarily so. NETinventory lets you use NetWare 5 and NT as logon servers, but the program writes all client details to the Audit Server, which runs only under NetWare 4.x. The same is true of the program's Master Server, which gathers and presents the information. In this area, BindView has to catch up — NETinventory 6.0 came out in late March, long after NetWare 5 shipped.

NETinventory triggers client audits with a program listed in the logon script for NetWare or NT servers; you can check stand-alone PCs by diskette. Our audits took about a minute and created a fair amount of net traffic. Configuration options let you specify when to run audits and on which machines. Users need only to press Enter to clear the logon results box on some systems. You can run separate utility or batch files before and after the audit, if necessary, and administrators can modify client configuration files from the console.

The console is informative without being too cluttered. Drilling down for details is straightforward.

Hardware audits are full and complete, from memory and CPU statistics down to sound cards and mouse information. Predefined reports can identify PCs that are low on disk space, file and buffer information, device drivers, network configuration, and those machines suffering from the Pentium math-glitch bug.

NETinventory delivers quite a few operating system details for NetWare and NT. The product provides access to more NDS information than any other program, and more than most administrators will ever need.

Software reports are packaged per file server or per PC and include templates for listing applications types, such as all spreadsheets. NETinventory's report export options are strong.

Installation was long and involved, mostly because we had to install three server software pieces and multiple products from a single CD-ROM. Also, the automated installation process failed for two Dynamic Link Library files, WAM16 and WAM32, which we had to load locally. In general, plan for plenty of hands-on installation time.

AimIT misses the target

CA's AimIT 3.0 Workgroup Edition is one of the few products we reviewed that supports Mac clients. However, mislabeled operating systems and limited options for exporting reports colored our impression of AimIT.

NetWare or NT logon scripts load and trigger AimIT Agent software for DOS, Windows, OS/2 and Mac clients. Each client must have a direct connection to the system running the AimIT database. In other words, the 60+ small files loaded on the client must communicate to the database server, not the logon server. This makes sense in hindsight, but is unclear during installation.

Each client reads over 3M bytes of data from the

Report export formats

	HTML	Microsoft Word	Excel/1-2-3	Notes DBF	ASCII	Other
WinLAND 4.5	•	•	•	•	•	RTF
NetCensus 2.94					•	dBase
Gasp Audit 5.0	•	•	•	•	•	RTF
NETinventory 6.0		•	•		•	PDF, dBase
AimIT 3.0 Workgroup Edition	•				•	

server during each inventory check. This process includes the audit application, which is stored on the server or can be saved locally to reduce network traffic by about half.

AimIT provides plenty of hardware detail through a drill-down tree display on the console, including separate listings for the video board and monitor. Oddly, AimIT includes the operating system under the hardware inventory. However, more disturbing is the fact that AimIT consistently labeled our Windows 98 stations as Windows 95.

We were disappointed with the results of AimIT's software inventory. AimIT ignored Starfish SideKick, NetObjects Fusion, and Adobe PageMaker. It even called Adobe Acrobat unknown — despite the fact that AimIT's documentation is displayed in Acrobat PDF files.

AimIT offers script languages to automate workstation management, including hardware parameter checking and software environment variables. A long list of commands and variables can help you automate software upgrades across the network, a feature not included in most other packages.

Users can modify report details with the included AimIT Reporter software. Drop-down lists reduce typing, and it's easy to choose sets of hardware or software details. Scheduling inventory and resulting reports is simple.

To get AimIT up and running we had to install CA's Unicenter framework and separate database engine on our 120-MHz Gateway running NT Workstation 4. You can choose to run the AimIT Console, Engine and Domain Database separately or on the same machine. For the most part, installation is a sit-back-and-watch affair.

AimIT includes its own directory structure for your network, including domains and groups. CA claims there are ways to import information from NDS, but we found nothing in the manual.

We'd like to see CA be more generous with printed documentation. The small "Getting Started" booklet is the only physical instructions provided with our Workgroup version.

Gaskin is a freelance writer who specializes in technology. Visit www.gaskin.com, or contact him at james@ gaskin.com.

Gaskin is also a member of the Network World Test Alliance, a cooperative of the premier reviewers in the network industry, each bringing to bear years of practical experience on every review. For more Test Alliance information, including what it takes to become a member, go to www.nwfusion.com/alliance.

Join the club

IT professional associations give you more than just something to put on your resumé.

BY LAUREN GIBBONS PAUL

For Jeff Hafer, being a member of the industry group the International Communications Association (ICA) is like having an insurance policy against disaster.

Whenever the manager of telecommunications engineering for GPU Energy encounters a problem on the job, he grabs the phone or dashes off an e-mail to a trusty ICA colleague to ask for advice. "I don't have to go through three days of hell fixing the problem," Hafer says from the electric utility's Reading, Pa., headquarters.

As a nearly 20-year member of ICA, Hafer is simply reaping the rewards of a long-term investment in developing relationships with his peers at other ICA-member companies. "Networking for networking — that's what I get out of it," he says.

Professional associations are a fact of life for network managers. Sooner or later, you're going to get recruited to become a member. And you'll wonder, "What's in it for me?" Will the value of joining an association outweigh the time and money you (and your company) will need to spend? The answer is likely to be a resounding "yes."

Many network managers rely on professional associations such as the ICA and the Network Professional Association (NPA) to bring them up to speed on new technologies, to provide a forum for information sharing with peers and to keep them abreast of industry and regulatory developments. Some organizations even offer members access to job banks and health insurance policies.

"Associations are worthwhile. If you had to do everything yourself, you'd never get the work done," says Bill Coopman, manager of telecommunications industry and regulatory affairs for Deere & Co., in Moline, Ill. A 30-year member of the ICA, Coopman depends on ICA for information, particularly on telecommunications regulatory matters.

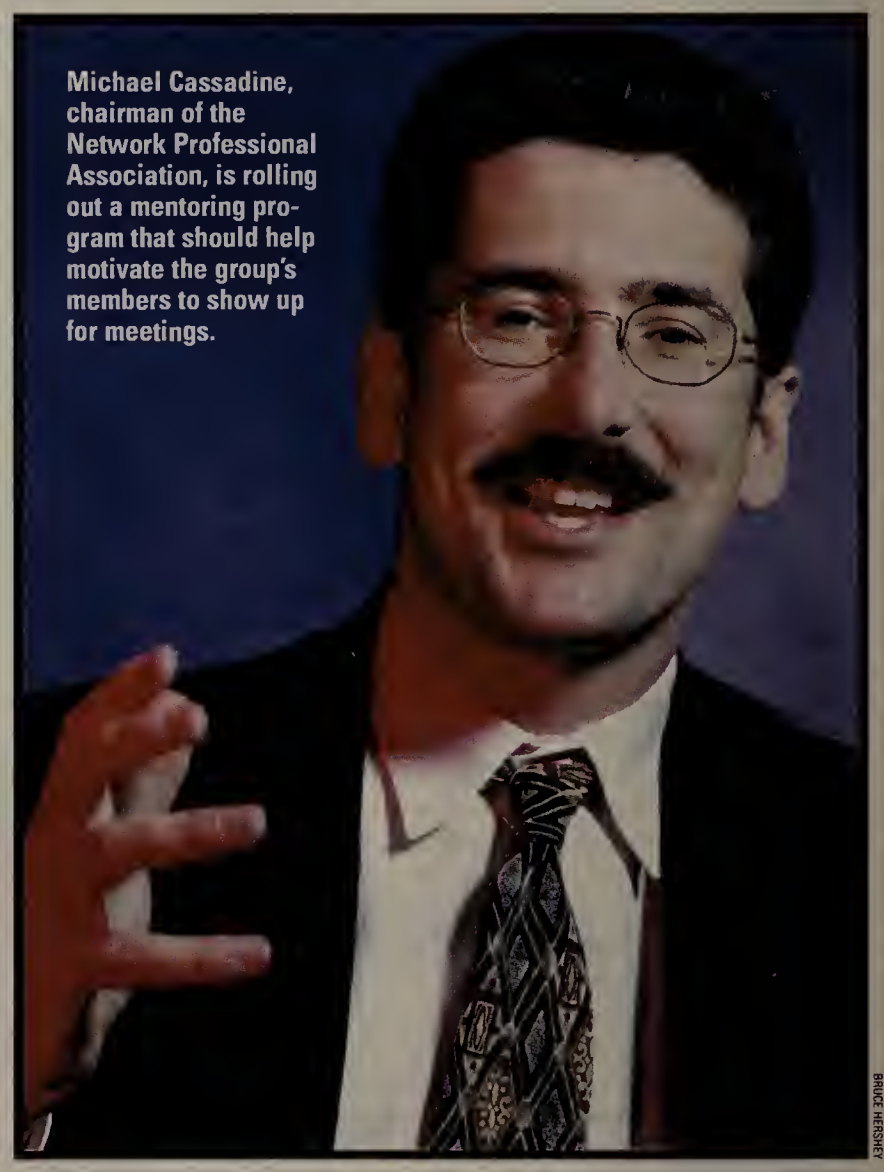
The downside is you won't get any benefit from membership unless you're willing to spend time building relationships. If you're constantly in crisis mode and can't afford to attend at least an annual conference and a monthly committee meeting, don't bother. In short, you get out of professional associations what you put in.

Lack of participation is one potential pitfall of professional associations, says Michael Cassadine, a Certified Novell Engineer and director of Los Angeles-based systems integrator Enterprise Connections.

Cassadine joined the NPA six years ago and currently serves as chairman of the 4,000-member organization.

"People may be members, but you don't see them. Some of them don't come out unless there's a major event," he says. This deprives members of the full opportunity to share war stories.

Naturally, it's often the senior people who don't attend functions because they probably have the least to gain by exchanging technical tips. Cassadine is combating that attitude by establishing a mentoring program that pairs young and less-experienced network professionals with their highly skilled brethren. Veterans may appreciate the opportunity to give back to the community by transferring their skills to the next generation. And once they agree to be a mentor, veteran members are more motivated to show up for the meetings.



Michael Cassadine, chairman of the Network Professional Association, is rolling out a mentoring program that should help motivate the group's members to show up for meetings.

BRUCE HERSHEY

The real deal

Besides getting help with practical problems, members often call on each other to give references for vendors or consultants. You can always call a vendor-supplied contact for a product reference. But when you're a member of a neutral professional organization, "you can call on another member and get the honest-to-God truth," says Ruth Michalecki, chairwoman of the ICA and director of telecommunications and IT for the University of Nebraska in Omaha. "You'll get the real deal from them. I would be lost without my network."

Vendor independence is an important criterion for a professional organization. "I try to avoid vendor-sponsored seminars — they're much too biased," says Ellen Van Cleve, director of data communications for *The New York Times*. Van Cleve is a member of the Communications Managers Association, which lets vendors make presentations at its monthly meetings but discourages overt product plugs and competitor-bashing.

And some groups are selective about the network professionals they allow to join. For example, CMA member companies must spend at least $500,000 on IT annually. Other groups such as the NPA restrict membership to those who have, or are working toward, certain certifications.

Chances are, there's a network-related association to fit your needs. While you're not likely to find liquor-soaked golf outings at the group's annual conference, you will likely learn about emerging technologies.

Moreover, associations help you build up a repository of trusted contacts that may someday save your neck in an emergency. Hafer says, speaking as one who's been there, "The payoff for your investment is huge."

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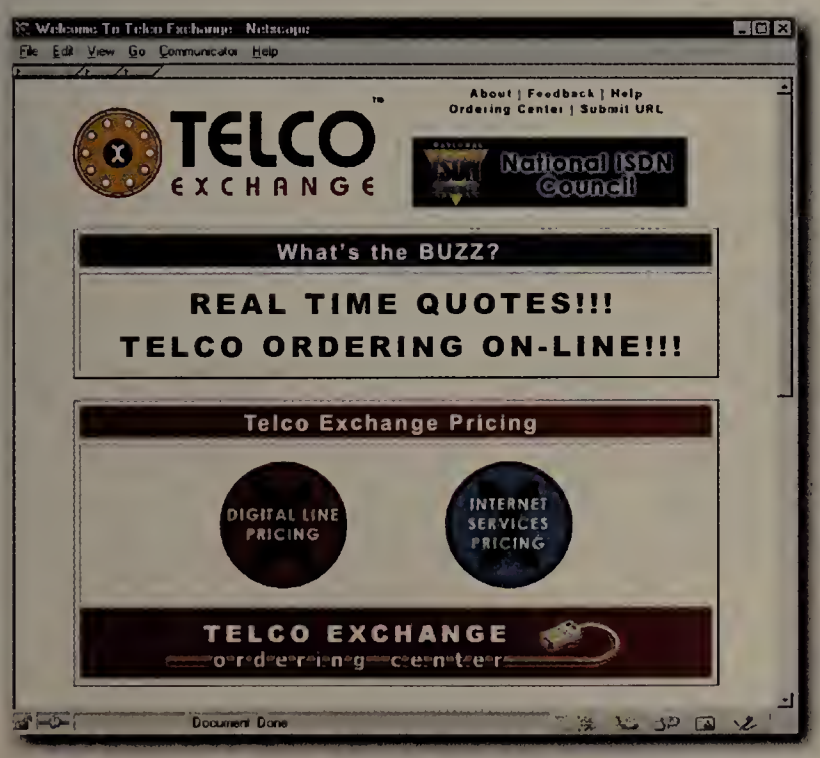

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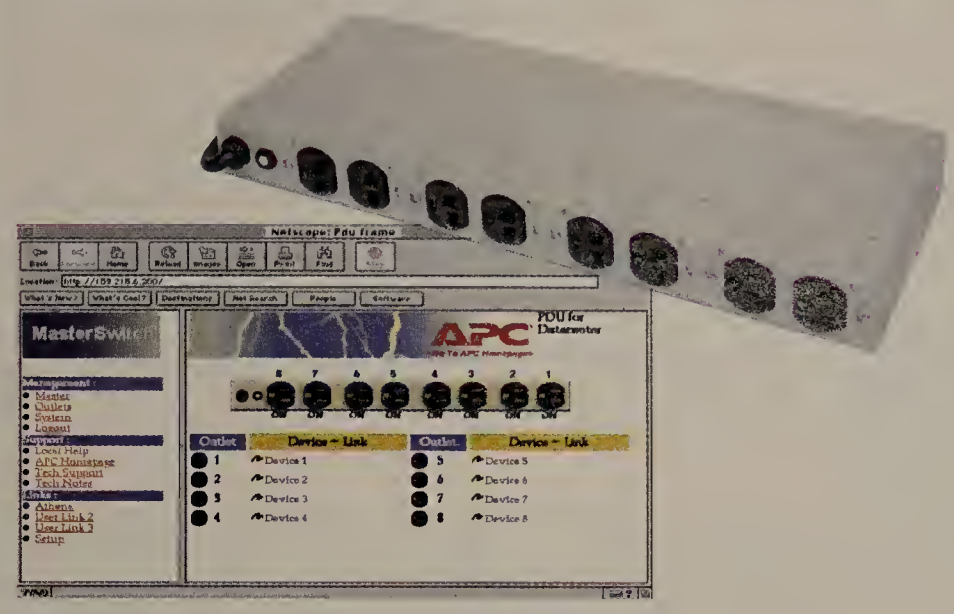

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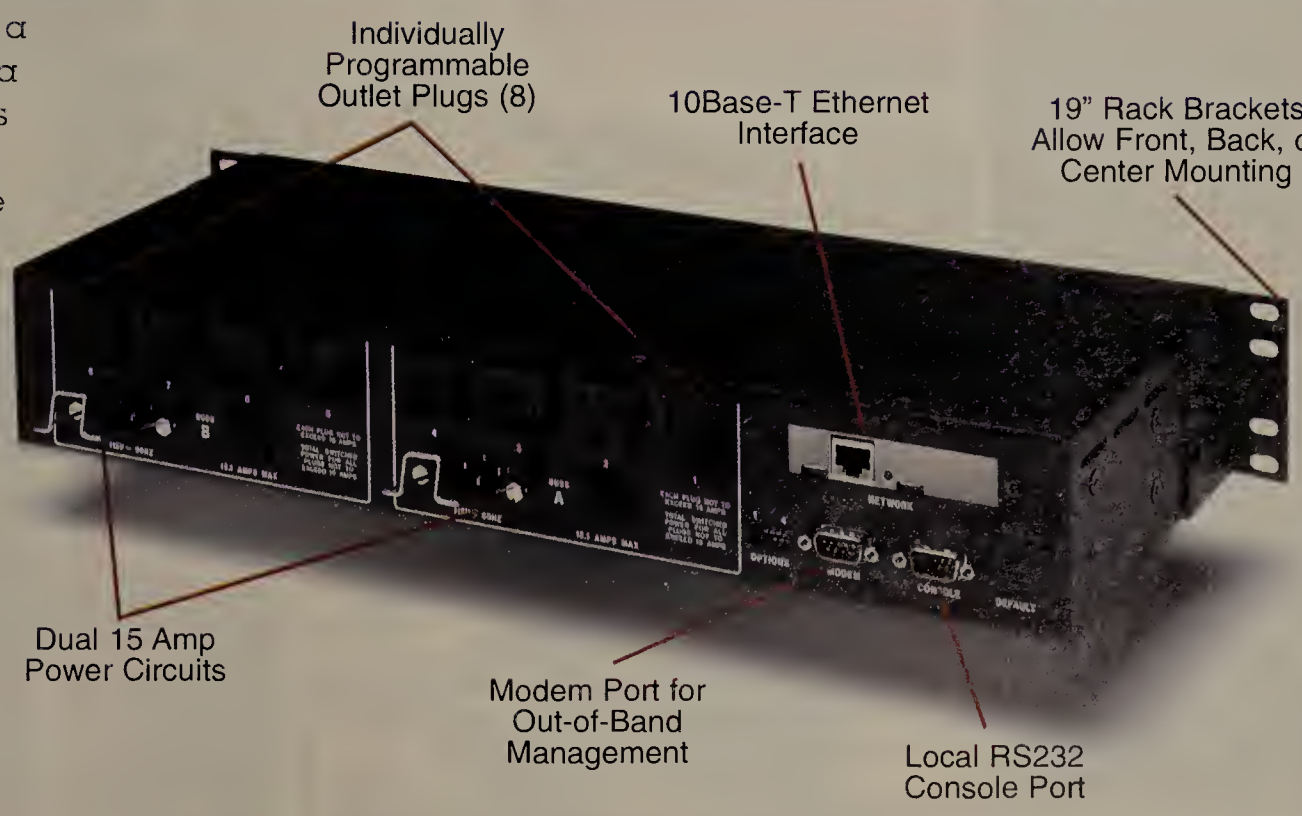

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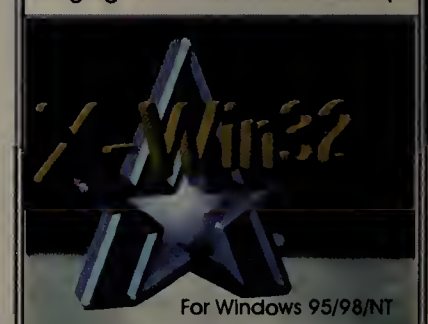

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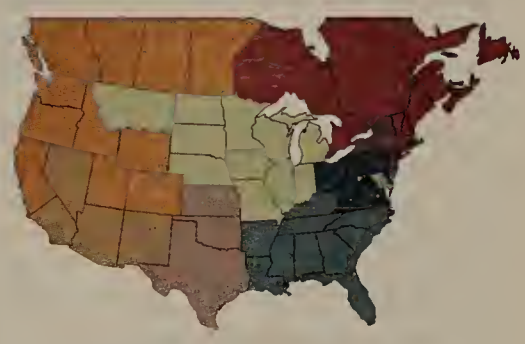

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Credit,
continued from page 1

cessing. She adds: "They don't want people to know they're afraid."

Neither Visa, MasterCard nor American Express wanted to talk about Internet credit card fraud last week. "I've been trying to get these fraud figures from them, too," says Steve Dieringer, head of the BancOne payments division called Emerging Markets for Card Acceptance.

Because online merchants sometimes take credit card numbers they get over the Internet and punch them into ICVerify terminals or point-of-sale devices, it's hard to track the fraud that actually comes from the Internet. But there is a strong sense that it's high.

Dieringer admits that until recently, BancOne was as guilty as any bank of not adequately meeting online merchants' demands for the equivalent of an Internet credit line. In March, though, BancOne struck a deal with Yahoo to take applications for online credit processing from Yahoo's e-commerce merchants, promising to approve them or not in 24 hours. About 300 have been accepted so far by BancOne.

But not all banks are as liberal as BancOne, leading merchants to seek processing alternatives. "Merchants have been turning to processors with an appetite for higher risk," Dieringer concedes.

One such tough operator is Electronic Transfer. "Visa tells us 50% of the calls with problems are from the Internet," says Curtis Cook, senior account representative at Electronic Transfer, the Spokane, Wash., firm that takes on Internet credit card processing along with other high-risk ventures. "And Visa says only 5% of all credit card processing comes from the Internet today."

Under the rules of the game, the credit card associations will shut down any merchant whose chargebacks from bad sales exceed 2 1/2%. "The local banks want the face-to-face credit card transactions that are safe," Cook notes, adding Internet merchant accounts have to be closely monitored. "Typically, you won't find the big banks wanting to do this."

Electronic Transfer, whose services come at a premium, tries to help would-be online merchants establish their own bank accounts at either Commerce Exchange Bank or Humboldt Bank.

"Washington Trust sends us customers for processing cards over the Internet, as does US Bank," Cook says.

"A lot of banks don't want the Internet credit card processing," agrees Deborah Rossi,

JIM DANIELS

Arbour's department can't transmit credit cards directly to its bank's processing net.

senior vice president at Wells Fargo Bank, which seeks out this business and offers digital certificates for Web servers that prove merchants' identities. "We hear it all the time."

Dallas-based Paymentech is another gutsy alternative to queasy banks. Paymentech plays the role of the merchant bank for online companies, including America Online, Amazon.com and Land's End.

"The Internet still represents a higher-risk transaction," says Rodney Bell, Paymentech spokesman. But he adds that mail-order business 10 years ago suffered from this same perception. At that time, when local banks wouldn't, Paymentech jumped in to underwrite mail order and benefited.

Paymentech wants to do the same for online merchants, particularly mid-size to large businesses. Paymentech declines to discuss its fees, saying they vary according to customer.

It's possible you won't qualify for your own Internet line-of-credit account. Then what?

There's Internet Billing Company, Ltd., or iBill for short. In operation for three years supporting 'Net card processing, iBill has what it calls a "reseller service," through which it takes credit card purchases from a merchant's Web site and processes them through iBill's own merchant account.

Merchants that use iBill's credit card account have to sign a contract that names iBill as product reseller, and iBill has to respond to calls from online buyers about the products. The charge is 10% to 15% of sales, depending on the volume, says Keith Miller, iBill's executive vice president.

But this is "borderline legal" in terms of credit card rules, says consultant Grant. The credit card industry bases its discount fees on risk evaluations that are made according to many variables about merchants. Shoving credit card numbers through someone else's account "screws up the risk model; you can't tell what type of volume the merchant is really doing," she explains.

Miller admits that iBill probably violates some contractual agreements with the credit card associations because iBill does not ship the product. Starting in July, iBill will no longer offer this service for merchants whose products have to be packaged and shipped. But iBill will still do this type of processing for merchants with intangible wares, such as software downloads.

If merchants don't have their own bank accounts, ISP EarthLink Network actually "forces" them to get either individual credit lines or shared accounts from Card Services International, says Barry Friedman, EarthLink's director of product development.

"We guarantee the merchant a $10,000-per-month credit limit, unless he had a recent bankruptcy," he says. Another ISP, Concentric Networks, has a similar deal going with Payment Processing, Inc. for individual merchant accounts, and is considering the share-account approach.

Other problems still make credit card processing on the Internet an e-commerce headache. Although the state of Maine wasn't turned down for Internet credit card processing, the financial institute used by the state, Key Bank, won't let the state agencies transmit credit cards directly from the Web to the bank's card-processing net.

"It's apparently a security concern for them," says Richard Arbour, IS manager at Maine's Department of Conservation, which operates a Web site where the public can reserve campground space. Instead, Arbour's department has to take the credit card information via e-mail and manually process it through a point-of-sale device provided by the bank. "It's a nuisance," he says. ◪

Frame relay,
continued from page 1

class of service or QoS, although some vendors do similar things that are proprietary. The forum certainly hasn't dealt with it from a technical perspective. Whether we should is one of the questions."

"The kind of work we are doing maybe doesn't need to be done in a forum environment and is better off left for vendor-specific implementations," says Doug O'Leary, the Frame Relay Forum technical committee chairman.

Given that such doubts exist, O'Leary has asked the general membership whether the technical committee should scale back its work, go into sleeper mode, as O'Leary calls it, or forge ahead.

The answer is clearer to others. "The forum is getting bogged down trying to find busy work to do," says Liza Henderson, senior broadband consultant with TeleChoice, a telecom research firm in Boston. "Frame relay has matured to the point where it is a technology that is well understood and implemented."

Analysts say frame relay will continue its heady growth for a while, but the analysts see a plateau on the horizon.

"In another couple of years frame relay will reach its peak, stabilize for a couple years, then go into decline," says Steve Sazegari, principal with Tele.Mac in Foster City, Calif.

As countries with poor public network infrastructures modernize, frame relay may never be a factor, he predicts. ATM or developing optical technology such as packet over SONET will leapfrog frame relay, Sazegari says.

One sign that the forum is at a turning point is the recent difficulty the technical committee had reaching consensus on multilink frame relay — the ability to logically bond two separate frame relay access circuits.

"A number of members argued [multilink frame relay schemes] should be vendor-specific. An equal number argued they wanted an implementation agreement to standardize it," O'Leary says. The committee finally decided to bring the proposal up for a vote this fall by the full forum.

The struggle may indicate a change is needed. "It's a waste of time to spend months working on an implementation agreement that never gets implemented," he says.

The forum might do better determining how frame relay fits in with other technologies, says Tom Nolle, president of CIMI Corp., a technology assessment firm in Voorhees, N.J.

Network executives may want to use frame relay switches as part of a network using MPLS to speed traffic.

"That could rightfully be addressed by the Frame Relay Forum. The Internet Engineering Task Force could address it, but the answer wouldn't be optimized for frame relay," he says.

Also, the question of how to bind together IP and frame relay networks will inevitably become an issue, so the forum could spell out how to do it ahead of time using established standards, Nolle says. The forum could specialize in writing such application notes, he says.

But Nolle says it would be a mistake to disband because that would signal the technology is in decline, which it isn't.

"It's the most successful new service we've ever had. There is

Highlights of the Frame Relay Forum's technical achievements

With a string of technical successes behind it, the Frame Relay Forum is considering taking on more of a marketing role.

- **1991** • Forum founded
- **1994** • Frame relay to ATM networking interworking approved
- **1995** • Frame relay to ATM service interworking
  • Multiprotocol encapsulation
  • Network to network interface
- **1996** • User to network interface
  • Data compression over frame relay
  • Frame relay network to network interworking
- **1997** • Voice over frame relay
  • Frame relay fragmentation
- **1998** • Service level definitions
- **1999** • *Multilink frame relay
  • Frame relay to ATM service interworking for switched virtual circiuts
  • Frame relay privacy

*Pending

more revenue from frame relay than from the Internet," Nolle says. International Data Corp. projects the sale of frame relay ports will grow an average 15% per year between 1997 and 2003.

And frame relay is key to supporting new IP services today. AT&T's IP-Enabled Frame Relay service mixes IP routing with frame relay virtual circuits using MPLS.That lets all sites on a network connect to all other sites without needing to buy a full mesh of virtual circuits.

Those types of IP virtual private network (VPN) services will ultimately overtake frame relay networks, predicts Rich Glasberg, manager of data communication for the Commonwealth of Massachusetts. But that won't happen for years.

In the meantime, many enterprises will rely on frame relay for wide-area connections, including the 350-node, fully meshed network Glasberg oversees.

Until the day VPNs rule, he wants the forum's technical committee to be ready. Frame relay may seem mature today, but unforeseen challenges could arise that will call for additional standards.

"I understand they have covered seven-eighths of the issues, but the truth is the world is still a moving target. If an issue does come up, who would handle it?" he says.

While, as a user, Glasberg still sees value in the forum, the group itself has no end users as members.

The forum is 69% hardware vendors, 16% service providers and 15% academics. Membership has hovered between 135 and 145 companies for the past three years despite mergers and acquisitions among members, according to Dreher.

She says the current soul-searching by the forum is about deciding how to continue meeting members' needs as well as those of end users.

"I guess the question is, 'How do we want to evolve the forum?' We want to give members value for their membership dollars. But we also want to make frame relay more meaningful within user networks the way that they really use them," Dreher says. ◪

NHD,
continued from page 1

in the company and the marketplace.

To NHD's credit, the division has delivered on a promised family of Ethernet switching products and has landed a few big telco service provider contracts — with Sprint and MCI WorldCom.

On the Ethernet front, it's unclear if the new products have made inroads against well-established players, such as 3Com and Cisco, and the division has a long way to go before it would be considered an important player in that market (see graphic).

IBM had only a 1.3% share of Ethernet port shipments in the first three quarters of 1998, as compared with Cisco's 38.6%, according to researchers at International Data Corp. in Framingham, Mass.

IBM claims its low share is due to its late entry into the market. According to the Dell'Oro Group consultancy, IBM ranks No. 7 in the combined shared hub and LAN switching market, but the company did see a 19% growth in switch sales in the fourth quarter of 1998.

A shift in strategy

Last week, NHD's third leader in the past 12 months, Michel Mayer, further muddled the division's direction by saying that NHD will no longer try to become a significant supplier of network equipment to telecommunications vendors.

IBM had promised to ship a high-end switch aimed at telcos by the end of last year (*NW,* May 18, 1998, page 10).That product, which is code-named Flagship, will be formally announced next month, but IBM says that Flagship will be targeted for use at the edge of carrier networks rather than at the core.

Mayer says NHD will focus on being a supplier of OEM technology. Indeed, IBM has already had some success in the OEM arena. Alcatel and Nortel employ IBM's Prizma ATM switching technology and Cisco resells some of IBM's S/390 mainframe Web server technology. The OEM direction is part of an overall move by IBM Technology Group (of which NHD is a part) to become a major supplier to other vendors, such as Dell.

But the NHD strategy appears to be a far cry from the division's plan of last year. NHD was aiming to win back the hearts and minds of former customers with robust TCP/IP products, and intended to position IBM as a major supplier of equipment to ISP, telco and remote access markets. NHD sources claim, however, that the division is not sacrificing its IP or Ethernet strategies for its OEM plans — for instance, IBM plans to continue developing Ethernet gear.

NHD turnaround or runaround?

IBM does not disclose revenue for NHD, but sources put it in the same ballpark as IBM partner-competitor 3Com, at about $6 billion.

Detractors say the figure is closer to $3 billion. While NHD executives claim that the unit is profitable and is on a turnaround course, the latest signs seem ominous and raise questions as to whether NHD is hitting its goals.

Some critics say NHD is floundering and is now engaging in change for change's sake.

NHD's other market statistics vary. In ATM port shipments, IBM had 10.7% of the market for the first three quarters of 1998 — with Cisco at 25.3%.

IBM sources note that much of the division's revenue still comes from token-ring and other legacy product sales.

According to a report by Giga Information Group, IBM actually has succeeded in building a well-rounded switching product family — it just hasn't succeeded in getting the message out.

That conclusion about IBM's marketing is echoed by a recent report from The Yankee Group in Boston. Only 11% of small businesses considering a network purchase even think about IBM, says Eric Klein, an analyst at Yankee Group.

This is opposed to 3Com, which small businesses consider 22% of the time. "IBM is on the chart, but it's lower than we expected," Klein says.

And when IBM does make the sale in this markct, its profitability isn't clear, as the gear is highly discounted.

However, IBM recently launched a small-business Web site and, in the mid-size segment of the market, will show much better results in an upcoming Yankee Group survey, Klein says.

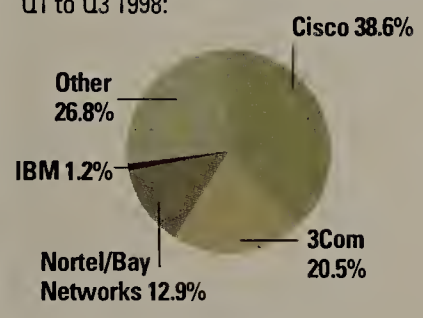
For at least one user, IBM's net gyrations haven't had much impact.

"We've always been happy with IBM here," says Dave Walsh, head of an IT project at the state Senate of New York in Albany. Walsh's group is embarking on a major network project using an NHD design Walsh is very happy with. ◪

Where NHD stands in the LAN

IBM's NHD unit has struggled in the Ethernet switching market . . .

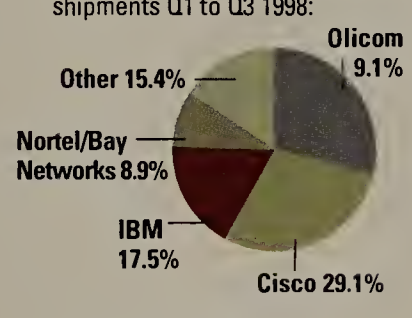
Worldwide total LAN switch port shipments Q1 to Q3 1998:



Total ports shipped: 32,279,787

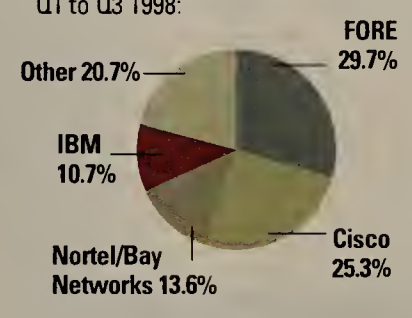
. . . but it is still a player in the token-ring and ATM markets.

Worldwide token-ring switch port shipments Q1 to Q3 1998:



Total ports shipped: 359,478

Worldwide LAN ATM port shipments Q1 to Q3 1998:



Total ports shipped: 471,354

SOURCE: IDC, FRAMINGHAM, MASS.

Network World, 161 Worcester Road, Framingham, Mass. 01701-9172, (508) 875-6400

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Backspin

The household appliance of science

"There is no reason anyone would want a computer in their home."

— Ken Olson, president, chairman and founder of Digital Equipment Corp., 1977

Last week we discussed dog hair, dust bunnies and the high-teching of household appliances. As if that wasn't enough, I threatened to follow up with a discussion of talking to your refrigerator, which is exactly what we'll do.

When I write "talking to your refrigerator" I don't mean literally — that kind of behavior could well get you locked up (although curiously, most of us talk to our PCs and it is not considered unusual).<digression>I have had cause to remonstrate with my new PC these past few weeks. I just bought a Hewlett-Packard Pavilion 8485Z. This is a 450-MHz Pentium III running Windows 98, and about once a day the display freezes. This is weird because I know it is still running — it's just that the display is literally frozen. If I hit the suspend button on the keyboard, the machine goes to sleep. When I wake it, everything, including the screen, is working again! <pleaforhelp> If anyone has a clue what is going on, please let me know. </pleaforhelp></digression>

MARK GIBBS

(Voice-over by Rod Serling) "Imagine if you will, five years into the future. You buy a refrigerator, little knowing that it is inhabited by a demonic force. . ." Sorry, I got carried away.

You buy a refrigerator, take it home and plug it in. What happens? Well, it immediately starts to communicate through the power supply: Your house wiring has become a data network.

<digression>Powerline networking is available today in the form of the X10 system (although the data rate is low) and products such as Intelogis' PassPort (which runs at a respectable 350K bit/sec). A number of vendors are looking to up the ante for powerline networking, and you can expect to see megabit data rates within the next few years. </digression>

So what is your refrigerator trying to do? Before it can do anything else, the fridge needs to see if it can find something intelligent to talk with.

Of course, the fridge shouldn't be able to talk to anything outside your house, and I suspect the power meter will block any transmissions. However, the meter itself will note the refrigerator's existence. Why? Because the power company can then keep track of what kinds of appliances you're running for planning purposes.

What will the fridge talk to? My money is on your TV. Vendors are building all sorts of smarts into set-top boxes, which will ultimately merge with the televisions they drive. Given my five-year window, we can expect that these devices will be pretty powerful and versatile in their communications capabilities. (PCs will also be capable of handling this interaction, but smart TVs will be ubiquitous.)

The refrigerator will make itself known to the set-top box and offer you, through the set-top box, a URL. If you follow the URL, you'll be taken to the manufacturer's registration process — the set-top box will automatically provide your demographic details, if you wish, and record and manage all of the warranty data.

The registration process will also provide your set-top box with a program to monitor the refrigerator, and here my money is on something based on Sun's Jini.

The downloaded monitoring program will communicate with the refrigerator, and should the fridge detect any deviation from normal operation, it will notify your controller (the set-top box or a PC) and provide a URL that can be used to inform the manufacturer of the problem.

What are the implications of this interaction? Tune in next week, when we'll discuss what this will mean to you and to the people who sell refrigerators.

Chill out with nwcolumn@gibbs.com.

'NET BUZZ

PAUL MCNAMARA

Let's start with the moral of today's story: Being an Internet bully can pay off big-time, especially if you pick on people who won't fight back.

Next, a warning: **Your company** could also play the role of 90-pound Web weakling if it doesn't do enough to protect its URL from the sand kickers and scoundrels who abuse the rickety Domain Name System.

AJR.NewsLink.org is a Web site run jointly by the *American Journalism Review* (AJR) and NewsLink Associates, an online research and consulting company. They are the victims here by any measure, although their refusal to even put up their dukes won't win much sympathy.

YearbookNews.com is an online database that journalists use to find "expert" sources. **Mitchell Davis** runs YearbookNews.com, and he is our story's one certifiable Bad Guy.

A key point to remember: AJR.NewsLink has talked about launching its own "Blue Book" online experts directory that will compete with YearbookNews for advertising dollars.

Make that *had* been talking and *would* have competed. . . . But I'm getting ahead of myself.

The folks at AJR.NewsLink.org were flabbergasted recently to receive a complaint from a would-be visitor to their site, who, it turns out, had inadvertently omitted the first "dot" in the URL. That omission brought the gentleman to www.whitehouse.com, a notorious **porn site,** through a redirect that had been maliciously placed on AJRNewsLink.org (note the missing first "dot").

Eric Meyer oversees the real AJR.NewsLink.org when not teaching journalism at the University of Illinois. After fielding the complaint, Meyer wrote a newsgroup post that professed his site's innocence in the switcheroo. The post also named a likely culprit, our man Davis, who had indeed registered AJRNewsLink.org (no first "dot") on May 10.

"So Mitch," I asked, "Did you do what AJR.NewsLink says you did?"

Davis hemmed and hawed. Then he stammered, stalled and tried to change the subject. Through 10 minutes worth of this bobbing and weaving, I could hear the tap-tap-tap of typing in the background.

"Go ahead and refresh your browser," Davis finally told me. "Now type in AJRNewsLink.org [first "dot" missing] again."

Shazam! The URL that had minutes ago brought me to whitehouse.com now landed squarely on the AJR Web site. In other words, Davis had redirected the redirect while we spoke.

We have a happy ending, right? The press puts an Internet wise guy in his place, and AJR.NewsLink.org goes back to planning that Blue Book.

One problem: The wise guy wins here because *AJR* doesn't believe this is a battle worth fighting. Plans for the Blue Book were officially canceled the very night Davis stopped his monkey business.

Meyer acknowledges that he and his colleagues "caved in to [Davis'] pressure," while noting that Blue Book may not have been abandoned if the matter had only involved Meyer's company, NewsLink. However, he adds, it would be unseemly for *American Journalism Review*, "a bastion of journalistic ethics," to do battle "with someone who would hurl porn at us as a weapon."

Rem Rieder, editor of *AJR*, paints a markedly different picture of what transpired. He contends that he never approved or planned to approve the plans for Blue Book that others associated with the Web site had been pushing. Therefore, he can't be accused of tossing in the towel, he says, "because there never was any towel." Pursuing those plans now would be a bad business decision if the motivation was simply to deny Davis the satisfaction of having made a competitor back off, he adds.

So much for standing up to intimidation.

Meanwhile, that's Davis you hear laughing all the way to his bank.

Help restore McNamara's faith in journalism by sending him your Internet news tips at (508)820-7471 or pmcnamara@nww.com.

ON THE WEB, YOU'RE ONLY AS GOOD AS YOUR SERVER.

*Comparison based on published SPECweb96 benchmark results as of 4/20/99. For more details, see www.specbench.org. IBM, RS/6000, AIX, the engines of e-business and the e-business logo are trademarks or registered trademarks of International Business Machines Corporation in the United States and/or other countries. UNIX is a registered trademark of The Open Group. Other company, product and service names may be the trademarks or service marks of others. © 1999 IBM Corp

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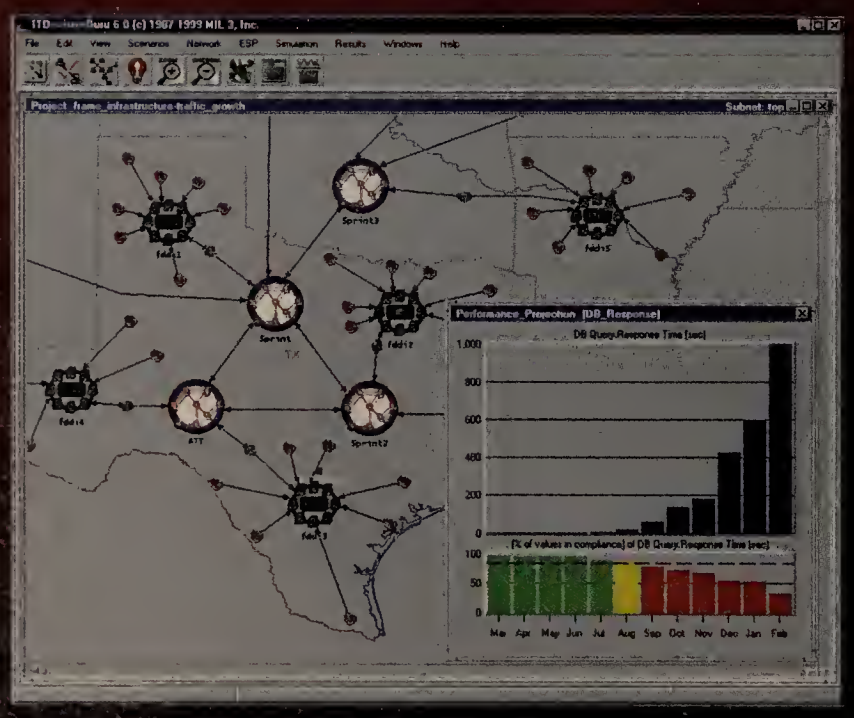

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